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TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

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*Being the Summary of Two Clinical Lectures Delivered in the Edinburgh Royal Infirmary,*

By WILLIAM RUSSELL, M.D., F.R.C.P. EDIN.,
PROFESSOR OF CLINICAL MEDICINE, UNIVERSITY OF EDINBURGH; PHYSICIAN TO THE ROYAL INFIRMARY.

I PROPOSE to deal with some aspects of the present epidemic and shall endeavour to show that whatever mystery may surround it in the minds of many persons, the mystery only exists where knowledge is lacking, and that on defining the points where ignorance exists the mystery lessens and fuller inquiry is suggested.

The epidemic of 30 years ago was, I think, essentially the same as the present one; but the present one is the more widespread, has attacked more individuals, and consequently has led to more deaths. The previous epidemic was called Russian, the present one Spanish influenza—geographical appellations which need not be taken seriously.

The present epidemic belongs to the great class of "infective" maladies. There is a *pure* influenza; but alongside the pure cases there are cases with other infective associates, and this is very pronounced in the present outbreak. It is improbable that this is a novel association. Knowledge of infective micro-organisms was in its infancy when the last big epidemic occurred; while much has been learned with regard to them in the intervening years. This enables us now to investigate the micro-organismal factors operating in disease with a completeness not practicable then. Indeed, it may be confidently assumed that association of infective micro-organisms is no new departure in biology, but is as old as the pathogenic organisms are. The present epidemic has confirmed and illustrated the fact of such combinations.

## CLINICAL PHENOMENA.

*Pure influenza.*—The temperature charts here shown are from cases of what we may call *pure* influenza. The history of the cases is fairly uniform.

The person affected begins to feel unwell, there is a sense of lassitude and of unfitness to continue whatever work he or she is engaged in; headache rapidly supervenes; when the temperature is taken it is found raised a degree or more; the individual usually goes to bed; the headache becomes more pronounced and may be almost blinding in intensity; there may be pains in the limbs; cough begins, and is associated with a feeling of rawness behind the upper part of the sternum, giving rise to pain on coughing. The temperature rapidly rises to 100°, 104°, or 105° F. The pulse rises to 80, 120, or more, and the respirations 20 to 30. There may be vomiting, and the face and neck may become suffused with red. The temperature reaches the maximum in 24 hours or so, then it rapidly falls and again rises, but not so high; on the third, fourth, or fifth day it ceases to rise above normal, pulse and respirations fall to normal, some cough may continue, but the patient is over the attack and enters on convalescence.

This, I take it, is the true, uncomplicated type of influenza; this was the malady in which Pfeiffer found the *Bacillus influenzæ* in the bronchial secretion. I was in Berlin at the time learning the significance of the discovery by Koch of the comma bacillus in cholera. Pfeiffer had finished his investigation and he showed me the work he had done, including the temperature charts of the monkeys to whom he had given the disease. The work seemed to be as conclusive as Koch's was on the comma bacillus.

*Different types and physical signs.*—The present epidemic, and from my recollection of it the previous one also, and probably earlier ones as well, presents a great deal more than this. The rough sketch I have given is almost certainly the most common, the mildest, almost harmless type. The more severe types are characterised either by extensive involvement of the bronchial system or of pronounced involvement of part of one or both lungs in addition. There are four sets of phenomena revealed by physical examination in the more serious cases.

1. In one group of cases the signs indicate involvement of the entire bronchial ramifications. There is no local impairment of the percussion sound; on auscultation rhonchi, coarse crepitations, and even gurgling râles are heard, especially posteriorly, while in parts, and especially at the extreme bases behind, there may be fine crepitations indicating congestion of alveolar walls.

2. In another group of cases there may be bronchial accompaniments, but, in addition, the lower half of the posterior aspect of a lung gives a definitely impaired resonance without absolute dullness, and over this dull region the striking fact is the paucity of respiratory sounds or the unusual type of accompaniments that may be heard. It often requires close attention to hear any sound whatever, and this is in strong contrast to the clearly audible breathing over the corresponding part of the other lung. On close attention now and again part of an inspiration is heard as if it were passing through with difficulty, while at the extreme base there may be fine crepitations.

3. In other cases one base will give impaired resonance, while over the same area auscultation reveals crepitations from small to medium and large in size; perhaps a patch or two where the breathing is bronchial. These phenomena may extend over the greater part of the lung or may appear at the base of the other lung and extend all over it, or there may be universal involvement of both lungs anteriorly and posteriorly. No considerable area of consolidation occurs and no bronchial breathing. Definite pleural friction I have found only in a few cases.

4. A group of cases in which the area of impaired resonance and crepitations goes on rapidly to consolidation with bronchial breathing and increased voice resonance, while the posterior aspect of the other lung may give signs of bronchial involvement or crepitations at the base.

*Other signs.*—In all these groups there is cough with expectoration. The expectoration is frequently mixed with blood, but it varies in quantity and in the colour it gives to the expectoration. At first the mucus not coloured with blood is in small, tough, whitish lumps, floating in more liquid mucus; later the expectoration becomes purulent. Pulse and respirations continue to be accelerated; the temperature, taken four-hourly, swings between 100° and 102° or 104°. These symptoms may continue for three weeks and the patient ultimately recover. In the fourth group, with the phenomena of consolidation present, there is ordinarily a definite crisis, followed by signs of either rapid or slow resolution.

*Fatal cases.*—Cases in any of these groups may be fatal within a week, but may die at the end of ten days or a fortnight or even later. Some of the earlier deaths are characterised by heart failure, which may unexpectedly show itself and lead to death in a few hours. In the later deaths the effect on the heart tells more gradually, but they also die more from that organ failing than from embarrassment of the respiratory functions.

### *Outstanding Facts.*

The outstanding facts are: (1) the presence of an acute fever; (2) the involvement of the respiratory tract; (3) the virulence of the infective element. Even in the cases of short duration the intensity of the onset is striking, and the patient's discomfort great, due presumably to height of temperature, headache, and pain in chest aggravated by cough. The cough commonly provides no auscultatory signs. These phenomena may all subside and the patient be convalescent within a week, with a little irritable cough remaining, or there may be no cough. Instead of early recovery taking place there emerges evidence of pronounced involvement of the respiratory tract; cough with sanguineous expectoration; physical signs indicating diffuse involvement of bronchi with abundant secretion in tubes of all sizes; congestion of alveoli as indicated by fine crepitations mixed with the coarser sounds and most abundant at the bases. There may be a patch or two where bronchial breathing corresponds with a dull area, or over one or both lungs posteriorly percussion may be impaired, but no absolute dullness. This type runs a course of three weeks or more—a period of severe and anxious illness, with temperature mounting daily to 103° or 104°, pulse 120 or more, respirations 40 to 50 or more, cough, mucopurulent expectoration, cyanosis, great prostration, and delirium, especially at night. These cases may die in the second or third week without material change in the physical signs, save that a base over which the breathing was absent or anomalous may present rhonchi and coarse to fine crepitations. They die not of the intensification of the lung

condition, but of the toxæmia due to the virulence of the infective factor.

These cases present a very different picture from that of the classical acute lobar pneumonia which begins with crepitations, goes on to bronchial breathing, or absent breathing if bronchi as well as alveoli are filled with secretion or coagulum, and ends with the crepitations of resolution. It usually ends by crisis in seven or eight days, or less; while death may occur on the fourth day, or at the end of a week, from the intensity of the toxæmia acting on the neuro-muscular heart mechanism. In the influenza cases there is extensive and severe bronchial affection, while the accompanying alveolar involvement is an intense congestion associated with œdema and quite insignificant areas of consolidation. You do not find half a lobe consolidating and, therefore, there is no large area of bronchial breathing at any stage of the illness. And yet this is spoken of as pneumonia and the smaller areas as broncho-pneumonia. *An inflammatory affection of the bronchi and great pulmonary congestion are certainly its leading characteristics.*

At the same time there are many cases of true croupous or lobar pneumonia which may suggest at the outset that they are influenzal, but there is less bronchial involvement, the physical signs are more localised, and in two or three days the crepitating base becomes dull with bronchial breathing. The future of such cases is as varied as the classical picture may be varied by extension, by delayed crisis, or by unsatisfactory and slow resolution.

### THE MICRO-ORGANISMS.

When we pass to the consideration of the infective factors we are met with the fact that published observations are not uniform. Three micro-organisms have attracted most attention: they are the *Bacillus influenzæ*, the *Diplococcus pneumoniæ*, and a streptococcus presumably pyogenes. The epidemic is known as the influenza epidemic and published observations deal directly or indirectly with the presence or absence of the influenza bacillus. Some observers have found it present in a large proportion of the cases examined; others, who at one time did not find it, found it when they improved their methods by altering the culture medium they had depended upon. In some quarters the ætiological value of the bacillus is questioned or denied.

The pneumococcus has been found in a large proportion of cases examined in some quarters, and a streptococcus has been found the predominant organism in other quarters. There can, I think, be no question as to the presence of one or other of these; in the Navy the evidence points to streptococci being the predominant organism observed; but some observations from that side found them associated with the influenza bacilli when effective measures had been adopted for recognition. In South Africa and elsewhere the predominant organism observed has been streptococci. The land cases in this country may safely be said to be mainly pneumococcal, as distinguished from streptococcal.

In Edinburgh observations have been limited owing to the shortage of laboratory staffs; yet, while I cannot record a large number of cases efficiently examined, some contribution can be made to this most important aspect of the questions under discussion. By microscopic examination of sputum, coupled sometimes with culture observations, there can be no doubt as to the prevalence of pneumococci. In view of the divergent and conflicting statements with regard to the influenza bacillus, I have had the sputum from some selected and typical cases examined for me by culture at the Royal College of Physicians Laboratory, and I hope to add to their number. Most of the cases examined were in my wards here, but some were outside. The sputum was examined particularly for influenza bacilli and pneumococci. The result was that in certain cases both organisms were found, in other cases pneumococci only; there were no streptococcal ones.

*Double infection.*—The cases in which double infection was present were the most serious cases showing extensive involvement of bronchi with much pulmonary congestion. These run a course of three weeks or more; there is at no time consolidation with bronchial breathing affecting more than one or two small areas; recovery takes place by lysis, not by crisis; but death may occur at any stage from exhaustion and heart failure, suggesting intense toxæmia.

*Pneumococcal.*—The cases of pneumococcal without influenzal infection do not show such extensive involvement of both lungs; they early gave signs of an extensive and continuous area of consolidation and bronchial breathing, and terminated by crisis. While this was the striking difference between the single and the double infection the pneumococcal ones varied, as pneumonias in other years have done. Pneumonia, as we know it now, does not always run the classical course described in text-books. Moreover, the pure pneumococcal pneumonias of this epidemic period give one the impression of abnormal virulence, and the virulence is not due to association with the influenza bacillus.

*Streptococcal.*—To what extent streptococcal infection is associated with the influenza bacillus is outside my experience, but there is evidence which suggests that with efficient methods of investigation they would be found to be often associated. There seems, however, to be no doubt of the great virulence of the streptococcal cases, and here, as in the pneumococcal cases, the double infection must be specially fatal.

*Other micro-organisms.*—There may have to be added other micro-organisms, and quite recently we have been informed of a filter-passer in cases of so-called influenza. The three organisms I have dealt with are certainly present and are often associated.

### VIRULENCE AND ASSOCIATION.

From all this, it seems to me that the question is a bigger one than is covered by the ordinary conception of an "influenza epidemic." The observations which have been recorded from places scattered over both hemispheres warrant the conclusion that we are in a pandemic period in which at least three micro-organisms have attained what we may hope is their acme of virulence. There may be others, but there is abundant evidence as to the importance of the three. The mystery of the epidemic lies in the fact that the conditions which have determined the virulence are unknown; and that the conditions have been equally favourable to all three organisms. Whatever the conditions are, they seem to be world-wide, and they are most pronounced where there is most crowding and where the hygienic conditions are bad. That the association of pathogenic organisms greatly intensifies toxicity has been long known; so there is no ground for surprise when we find the influenza bacillus with the pneumococcus or with the streptococcus producing extensive and pronounced phenomena in the respiratory system and giving rise to an intense toxæmia. The heightened virulence of diphtheria, when associated with a streptococcus, has been long known.

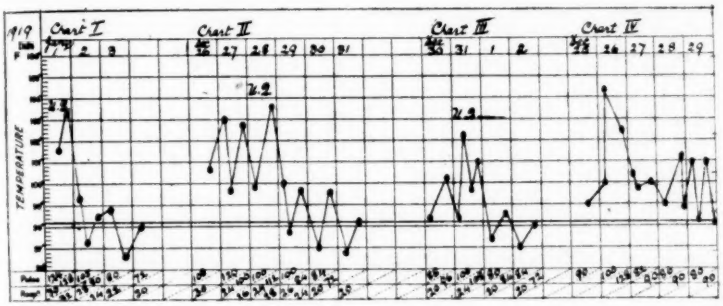
### FACTORS IN INFECTIVE MALADIES.

In all infective maladies there have always to be faced three factors, the relative value of each being so far indeterminable—namely, the virulence of the organism, the dose or number of the organism, and the resistance or the degree of acquired immunity of the individual or community attacked. On two points there can be no doubt; they are: (1) the virulence of the organisms, separately and combined; and (2) the difference in vulnerability of communities and of individual members of the community. The difference in vulnerability has been shown by the great mortality following on the outbreak of the epidemic amongst the native races in Africa, India, and elsewhere. In this country the degree of vulnerability must vary within very wide limits. I, unfortunately, have had only limited opportunities of investigating the bacteriology of the sputum in what I have ventured to call the *pure* influenza cases, but I have had one patient with a typical mild attack without a rise of temperature, and yet the bronchial secretion contained some influenza bacilli and some pneumococci. In another patient, with some malaise, no rise of temperature, but cough early providing a small lump of tenacious white mucus from a bronchus, which revealed on cultural examination both micro-organisms. The positive virulence of the pneumococcus in this case was proved by ordinary laboratory methods, yet the patient continued at work. There must be thousands of such cases. The point which is undetermined is whether all the mild cases are mixed infections or are pure influenza cases without pneumococci or streptococci. Such cases as the preceding can only be explained by low vulnerability, inherited or acquired; and they evidently do not negative high virulence of the micro-organisms present. These facts help to explain the great range of severity the epidemic has presented even amongst our own people. Another point which

requires much routine observation is the possibility of the influenza bacillus disappearing from the sputum; in one very severe case, seen by me outside, an observation made when the respiratory symptoms became pronounced gave influenza bacilli and pneumococci, while ten days later pneumococci were reported and "*no* influenza." In the case of Chart VI. (below) both organisms were present in the third week.

### CASES AND TREATMENT.

When we turn to the consideration of treatment it must be acknowledged that it is not satisfactory. In mild cases, and they, after all that can be said about the death-rate, constitute the vast majority of the cases, little treatment is required beyond keeping the patient warm and in bed. A febrifuge mixture, or compound tincture of quinine with compound tincture of camphor may be given with phenacetin to relieve the initial headache. My own experience of mild cases is limited, but some of my observations are not without interest.




U.Q., Urea quinine hydrochloride, gr. xv.

Chart I. is from a female patient who took ill on Jan. 1st in the afternoon; by evening there was intense headache, pain in the chest, the temperature was 103·4° F., the pulse 28, and the respirations 30. I advised urea quinine hydrochloride, and she was given gr. xv. intramuscularly. The headache subsided, the temperature fell, and the patient slept. The chart shows how promptly this case subsided.

Chart II. is from another female patient who became ill on the afternoon of Dec. 26th with severe headache, cough, high temperature, and accelerated pulse. She was given quinine and tinct. camph. co. without improvement, so on the evening of the 28th she got urea quinine, and her further progress is shown in the chart. Pneumococci and other organisms were present in the sputum.

Chart V. is also from a female patient who took ill on Jan. 21st with headache, cough, and temperature of 103° F. Next morning I anticipated extensive bronchial involvement and gave her a vaccine (No. 1) containing 170 millions of the organisms. She made a speedy and a clean recovery.

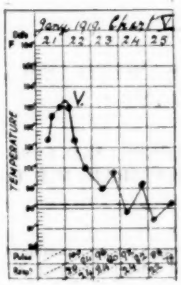
These five cases illustrate what must be common types; but I., II., and V. gave the impression that they might pass into the graver type with pronounced respiratory involvement. I do not, however, seek to draw big generalisations from them. So far as they go they speak for themselves, but they suggest that urea quinine is a useful drug even in cases that looked as if they might become protracted and severe; while in Case V., which looked as if it would become a bad one, the use of a large dose of vaccine at the outset not only did no harm, but seemed to counteract threatening virulence, and to make the recovery a *clean* recovery.

The dose of quinine urea hydrochloride was gr. xv. injected intramuscularly. It was prepared by Messrs. Duncan, Flockhart and Co.

#### *Severe Cases.*

The next three cases were the most severe and the longest for which I was continuously responsible. Many of the worst cases admitted to my wards after being ill for a week succumbed within a few hours or days in spite of careful nursing and free stimulation. In private work the consultant sees only the very bad cases, after they have been ill for some time and are not recovering. In cases bordering on collapse I have not attempted heroic measures.

Chart VI. is from a male patient who, at the outset, looked as if he were to be a mild case; but on the fourth day the temperature rose to 104·2° F. and there were crepitations at the base of the left lung with impaired resonance; these phenomena soon appeared at the right base and spread over the whole of the right lung. There was considerable cyanosis, and the pulse was small and of wretched quality. The general condition was of extreme gravity. Camphor gr. 1½ in oil was given hypodermically every four hours with whisky between the doses. Oxygen was given for the cyanosis. When a lung and a half became involved and the general condition seemed desperate I ventured to give him a dose of vaccine containing influenza bacilli 10 millions, pneumococci 30 millions, and streptococci 13 millions. There was probably some local reaction after this dose, for the affected parts of the lungs seemed to crepitate more, but any suspicion of this having occurred subsided in the course of 48 hours and the patient's general condition seemed to be less desperate. I have to acknowledge want of courage to repeat the vaccine, and relied upon urea quinine hydrochloride in addition to camphor, whisky, tinct. camph. co. to relieve cough, and an occasional dose of digitalis when the circulation seemed to need it. The urea quinine was very helpful; on several occasions when the patient was becoming delirious, sleepless, and intoxicated the administration checked the symptoms. As the chart shows, the temperature after three weeks of arduous struggle became normal, but the lungs very slowly cleared up. The sputum, at first mixed with blood, became copious and purulent, and finally stopped. The patient made a complete recovery.




V., Vaccine.

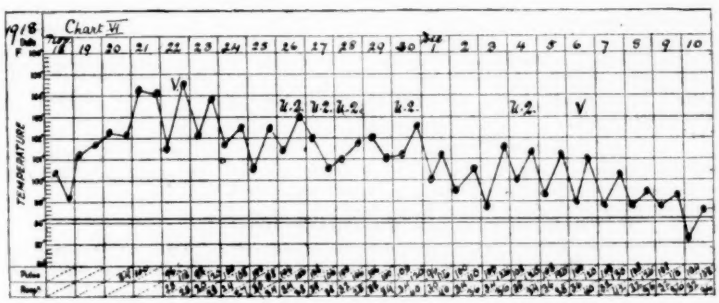
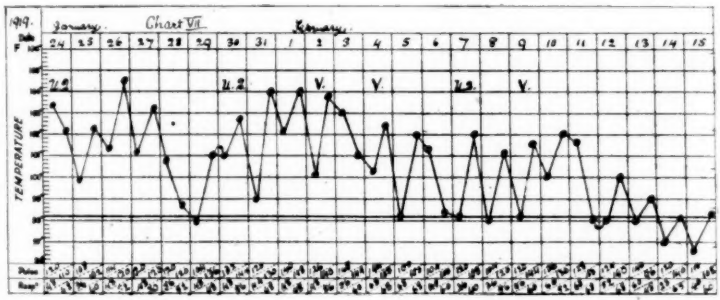


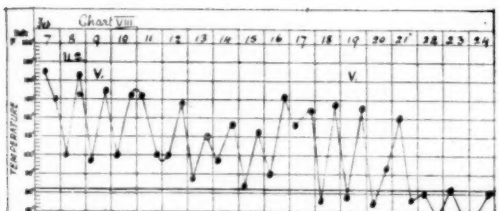

Chart III. is also from a female patient who began on Dec. 30th with mild symptoms, but on the 31st the temperature rose to 102·2° and vomiting came on; this was checked with ice and she was given an injection of urea quinine, and the progress of this case is shown in the chart.

Chart IV. is from a married female patient who became ill on Dec. 25th; on the 26th she had headache and cough, the temperature was 104·4°, and she had passed a sleepless night. Phenacetin gr. x. were given, which relieved the headache and brought down the temperature. Sleeplessness was then the most distressing symptom; for this paraldehyde proved ineffective on the 27th, while 5 gr. veronal were effective on the 28th and 29th, and by the 30th the attack was over and the temperature normal.

Chart VII. is from a female patient who had been ill for four days before being admitted to my ward. She was treated with camphor administered hypodermically every four hours, with brandy between the doses. Both lungs presented evidence of extensive involvement, but at no time the dullness of consolidation or bronchial breathing. She was given urea quinine when admitted. For days there was little hope that she would live. On the seventh day after admission she had urea quinine again, which had no marked effect on her general condition. On the tenth day the condition continued to be so bad that I decided to give a dose of vaccine; this did no harm, was repeated in two days, and again within a week, as shown on the chart. After three weeks the temperature fell to normal and the lungs cleared up. Although there was much cough she did not expectorate, so the sputum was not fully examined.

Chart VIII. is from a female patient who had been ill for a week before admission. Both lungs were crepitating all over, anteriorly, laterally, and posteriorly. She was markedly cyanosed, and she was so deaf that she made no response even when I raised my voice in asking her how she was. The pulse was the only reassuring point in this patient. The cyanosis was pronounced and was treated with oxygen inhalation. On the third day after admission she was given 85 millions of the mixed vaccine, but the cyanosis deterred us from repeating this until the 19th. On the 21st there was profuse perspiration, the temperature fell to normal and remained there. On the 23rd she heard my speaking voice for the first time. The lungs slowly cleared up. That this was a case of combined influenza bacilli and pneumococci was shown by culture.




The drugs which I have used have been mentioned, and I must say that I would not like to have had to treat these cases and many others without alcohol and camphor. The improvement under them is often very striking, and has frequently suggested an antitoxin influence. The action of urea quinine is that of quinine and urea; of its therapeutic value there is no doubt, but I have not pushed it beyond what the charts show.

*Vaccine Therapy.*

The great problem, however, before the profession is the vaccine therapy of the epidemic. From many quarters evidence is forthcoming that preventive inoculation has given satisfactory results. In Edinburgh there is produced at the Royal College of Physicians Laboratory a vaccine which is sent out by Messrs. Duncan, Flockhart and Co.; the first dose (No. 1) contains *B. influenzæ* 30 millions, pneumococcus 100 millions, streptococcus 40 millions; the second dose (No. 2) is double the strength. It is this vaccine I have used. At the same time the profession is warned that inoculation should not be practised "if there is any reason to think that the individual is in the early stages of the disease" (influenza); and "it is not recommended that the vaccine should be used for acute cases," and if it is used only *one-twentieth* of No. 1 should be given. A warning of this kind must act as a strong deterrent, for most of us respect the expressed judgment of authority; and for myself, I have to acknowledge that this warning has biased my judgment and hindered my action. It was only after being in contact with the severe cases that it became impressed upon me that ordinary, or even extraordinary, drug treatment did not supply what was needed. I have used vaccines in certain bacterial infections a good deal and I have not hesitated to use them in increasing doses in very acute cases of colon infection of the urinary tract, and I have only seen good therefrom. Why not, then, in the respiratory involvement of the present epidemic? And yet there was this warning.

The illustrative cases given above show that inoculation at the beginning of an attack and during the course of an acute attack of great virulence is *not* dangerous. The dose used was seldom less than half No. 1 and sometimes it was the whole. If we can establish that the treatment is not dangerous the air is cleared, and for routine practice a smaller dose might be used to begin with, repeated every few days and increased in size. I have not been able to detect any evil effect, although I have watched the cases with an anxious and critical mind. I can even go further and say that it seemed to me that the patient's general condition improved, that the intoxication seemed to be lessened or restrained. And those who have closely watched the bad cases know how hopeless one feels in face of the deepening toxæmia when all ordinary measures have been used. No patient has died to whom the vaccine has been given.

Doubtless in this case, as in every kind of therapy, there can be no rule of thumb procedure; the power to recognise what effect remedies are having on the individual has to be assumed, although the faculty of sound medical judgment is not universal. In capable hands, however, vaccine therapy seems to me to be the most promising line of treatment, if adopted as soon as definite respiratory signs appear, and if pushed with judgment.

I am indebted to the Royal College of Physicians Laboratory for the cultural observations and to Dr. C. Y. Wang for his personal interest.

## EXPERIMENTAL STUDIES WITH SMALL DOSES OF X RAYS.*

BY

S. RUSS, D.Sc., HELEN CHAMBERS, M.D. LOND., GLADWYS M. SCOTT, AND J. C. MOTTRAM, M.B. LOND.

### 1. *Introduction.*

THE subject-matter of the present paper consists of experimental facts as to the effects of small doses of X rays upon the blood of rats and upon the susceptibility of these animals to tumour implantation (Jensen's rat sarcoma).

An attempt is made to show the possible bearing of the salient features of these newly acquired facts upon the present-day treatment of malignant disease by means of X rays. It will be generally admitted that in such treatment attention is usually focussed upon giving the malignant cells a lethal dose of radiation. Two suggestions are put forward here in this connexion. When a therapeutic dose is given to the cells of a tumour the rest of the body receives a fractional dose of the rays. It is submitted that the action of these rays, especially upon the lymphocytes in the

* This research was undertaken at the request of the Medical Research Committee. The expenses were borne by the Cancer Investigation Fund of the Middlesex Hospital, and the research carried out in the Cancer Research Laboratories of that institution.

circulation, may be deterrent to the combative forces which the patient can normally bring to bear against the tumour growth. In the second place the possibility of increasing the resisting powers of the system by means of small doses of X rays is shown to have an experimental basis.

2. *The Effect of Small Doses of X Rays upon the Blood.*

Exposure of a rat to a large dose † of X rays causes profound changes in its blood; the cells most affected thereby are the lymphocytes, other blood cells are acted upon by these rays

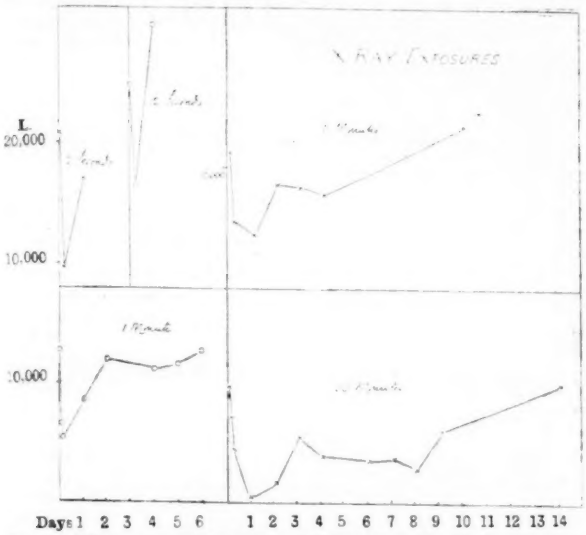



FIG. 1.—Effects of varying periods of X ray exposure. L, lymphocytes; the figures give lymphocytes per c.mm.

but generally to a much less extent. Our attention is here practically restricted to the behaviour of the lymphocytes.

A series in which the time of exposure was varied from 30 minutes to 2 seconds yielded the result that in each case, one hour after the exposure, the number of circulating lymphocytes was reduced to about 50 per cent. of the initial content; this is shown in Fig. 1. It is seen that the time elapsing before the lymphocytes return to the normal number is longer the more prolonged is the X ray exposure.

The character of the recovery curve has, within limits, a much more quantitative connexion with the dose of X rays administered than has the initial disappearance (1 hour after) of the lymphocytes, for, as stated, this is practically the same over a wide range of doses.

A more detailed study of the disappearance and return of the lymphocytes has been made for various doses. As an example, Fig. 2 shows this for an exposure of one minute, total blood counts being made every hour until recovery was well advanced.

We have obtained identical results upon the lymphocytes with unscreened "medium" X rays and with very "hard" X rays screened by 7 mm. of aluminium. It is necessary in comparative work of this kind to adjust the intensity and degree of radiation so that equal amounts of X rays are absorbed by the animals in the two cases. Under these conditions similar effects are observed.

† Reference throughout to the dose of X rays will be to the length of time of exposure. The quantitative side is detailed in Section 6.

From the results of many experiments devised to determine the nature of the action of the X rays on the lymphocytes, it has been concluded that the action is a direct one upon these cells in the circulation. One such experiment was as follows:—

A rat completely screened by lead except for a region over the heart was exposed to a parallel beam of X rays; the exposure was adjusted so that the circulating blood should receive the same amount of X rays as it would by exposing the whole animal for about 1 minute. The fall and recovery curves of the lymphocytes were obtained and charted in the manner indicated—e.g., Fig. 2; the actual recovery curve obtained lay between the 1 minute and 3 minute curves.

The fact that the lymphocytes disappear from the circulation in such large numbers after an exposure lasting

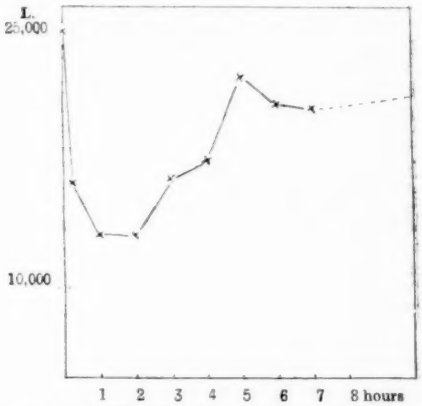



FIG. 2.—Disappearance and return of lymphocytes after exposure of one minute.

but 2 seconds leads us to doubt very strongly that this is due to their destruction, especially as they reappear with great rapidity. It is not a direct local effect of the radiation upon the tissues, for no local accumulation occurs in an irradiated area, nor have we detected any alteration in the general distribution of the lymphocytes, though the lungs, liver, and kidney have been examined from this point of view.

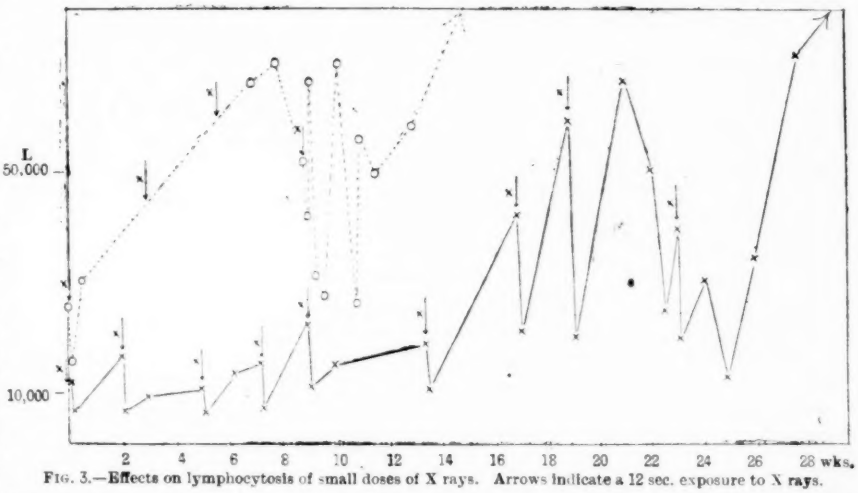



FIG. 3.—Effects on lymphocytosis of small doses of X rays. Arrows indicate a 12 sec. exposure to X rays.

If lymphocytes "in vitro" be given a dose one thousand times as large as that required for these effects "in vivo," no degenerative changes are detectable microscopically and no diminution in their numbers is observed.

3. *The Production of Lymphocytosis by Means of Small Doses of X Rays.*

A rat when given a small dose of X rays (12 seconds) shows a 50 per cent. reduction of its circulating lympho-

cytes 1 hour later; then it begins to recover, and in 24 or 48 hours is normal again.

If the same dose be administered a fortnight later, a similar drop occurs, the recovery is slightly delayed, but the number of lymphocytes finally reached is generally greater than at the beginning. Repeated application of such a small dose may result in a high degree of lymphocytosis, as is seen from the charts in Fig. 3. The circulating lymphocytes in the two cases depicted have increased from 11,000 and 25,000 to 112,000 and 117,000 per c.mm. respectively; corresponding counts for the polymorphonuclear leucocytes were initially 5000 and 5000 terminating in 10,000 and 14,000 per c.mm. respectively.

There is clear evidence of instability in the blood content of these irradiated animals, but the number of lymphocytes rarely drops so low as the normal level, even several months after the exposures have ceased.

Exactly what are the best radiation conditions for the production of this lymphocytosis it is not yet possible to say. Large doses may eventually produce the condition, but are to be avoided owing to their injurious nature. It is uncertain at present whether a small dose repeated at very short intervals produces this result. One batch of 11 animals was given small daily doses (12 seconds) over a period of two months. The average of the lymphocyte counts before irradiation was 19,000, three days after the last dose of X rays it was 27,000, and no marked rise was detected later, although counts were made upon some of the animals for another two months.

In the accompanying table are given a few examples of a marked increase in lymphocytic content and the radiation conditions under which they were obtained.

*Table showing Lymphocytes per c.mm. after Radiation.*

| Time of radiation. | Numbers of exposures. | Duration of treatment. | Initial count. | Highest count obtained. | No. of days between first and last count. |
|---|---|---|---|---|---|
| 30 min. ... | 2 | 24 days. | 21,000 | 45,000 | 159 |
| 5 ,, ... | 1 | 5 mins. | 14,000 | 41,000 | 224 |
| 5 ,, ... | 3 | 94 days. | 17,000 | 35,000 | 108 |
| 5 ,, ... | 3 | 105 ,, | 15,000 | 38,000 | 222 |
| 5 ,, ... | 3 | 103 ,, | 22,000 | 33,000 | 225 |
| 5 ,, ... | 8 | 143 ,, | 11,000 | 72,000 | 264 |
| 1 ,, ... | 7 | 124 ,, | 13,000 | 31,000 | 144 |
| 1 ,, ... | 3 | 79 ,, | 15,000 | 45,000 | 169 |
| 12 sec. ... | 9 | 160 ,, | 11,000 | 112,000 | 224 |
| 12 ,, ... | 4 | 62 ,, | 25,000 | 117,000 | 125 |
| 12 ,, ... | 4 | 88 ,, | 34,000 | 66,000 | 170 |

Blood counts of 81 normal rats showed lymphocyte counts ranging from 6000 to 46,000 per c.mm., with an average of 17,000, only four values being above 30,000.

### 4. *The Part Played by the Lymphocytes in Resisting the Growth of Rat Sarcoma.*

It has been shown in a previous publication by two of us[1] that when sarcoma cells (Jensen's rat sarcoma) are inoculated into rats which have previously been immunised, the failure of the sarcoma to grow is associated with some special activity on the part of the lymphocytes.

The further experimental fact acquired was that if immune rats were given a dose of X rays sufficiently large to cause and maintain a marked lymphopenia, then such immune animals became once more susceptible to the growth of the sarcoma.

These two experimental findings show that the lymphocytes play an important part in determining whether the sarcoma cells grow into a tumour or not. There were several indications, however, that the number of lymphocytes in the circulation was not the only factor to be taken into consideration, and there is now clear evidence for this view. It appears that some mechanism is present in the immune animal which brings the lymphocyte to the sarcoma cells, and this is absent in the normal animal.

There is evidence (vide below) that (1) rats having extraordinarily high lymphocyte counts will bear growing tumours when inoculated, and on the other hand that (2) rats having little more than a normal lymphocyte content can exhibit all the evidence of immunity. The details of the experiments are as follows.

Three rats with lymphocyte counts of 66,000, 112,000, and 117,000 were inoculated with small pieces of the rat sarcoma. The graph Fig. 4A shows that quite as large tumours resulted as in the controls Fig. 4B.

Again, five rats which had been exposed for two months to small daily doses of X rays were found at the end of this time to have the following lymphocyte counts: 22,000, 17,000, 33,000, 28,000, and 19,000. They were then inoculated. Fig. 5 shows (under column A the last five rats) that four of them were immune, and the remaining one bore a small oscillating tumour. The growth of the tumour in normal rats is seen in the same chart (Fig. 5B, the last six animals).

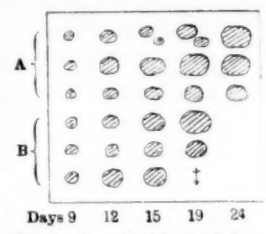



FIG. 4.—Growth of inoculated rat sarcoma in rats with high lymphocyte count (A), with controls (B).

In our opinion these results form a crucial test in deciding that some factor other than mere numbers of lymphocytes in the circulation has to be recognised as playing an essential part in the immune process.

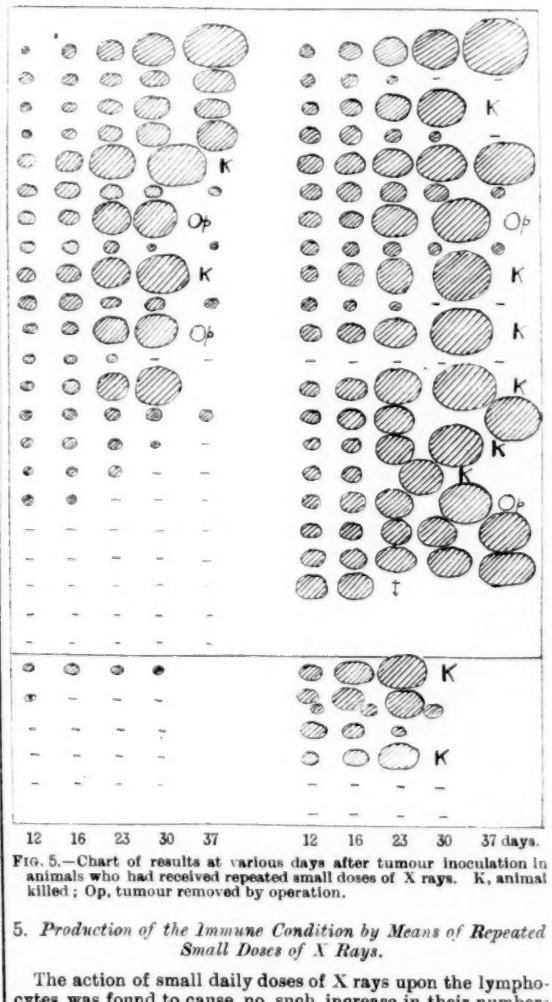



FIG. 5.—Chart of results at various days after tumour inoculation in animals who had received repeated small doses of X rays. K, animal killed; Op, tumour removed by operation.

### 5. *Production of the Immune Condition by Means of Repeated Small Doses of X Rays.*

The action of small daily doses of X rays upon the lymphocytes was found to cause no such increase in their numbers as resulted from the same dose applied at much longer intervals—e.g., two or three weeks. It was decided to see whether the administration of these small daily doses had any effect upon the animals as regards the subsequent growth of implanted sarcoma cells.

Sixty rats were taken, 30 of which were given small daily doses of X rays (12 seconds) for a period of two months, the remainder being kept as controls. Eleven days after the irradiation had stopped 25 of the animals from each batch were inoculated with small pieces of a growing tumour. Five of the irradiated animals were inoculated 40 days later. Charts of the resulting tumours were kept, the half-scale silhouettes of which are seen in Fig. 5; a much greater degree of immunity towards the tumour grafts is exhibited by the irradiated than by the normal animals.

Such a finding is in striking contrast with the fact that a large dose of X rays (1 hour or more) is capable of converting an immune animal into one in which a graft will grow upon inoculation.

### 6. *The Quantity of X Rays Signified by the Term "Small Dose."*

The X rays used in the above experiments, except where otherwise stated, were those emitted by a Coolidge tube worked by an induction coil at an alternative spark gap of about 4 in. (4 cm. between spheres, 5 cm. diameter); no screen was used other than a thin sheet of mica covering the aperture of the X ray tube box and a thin perforated sheet of celluloid covering the box in which the animals were placed during the X ray exposure—the distance from the anode to the animal was 30 cm. The composite beam of rays would generally be characterised by the term "medium" or "medium soft."

Details of the current in the primary and in the secondary of the coil, the heating current of the spiral of the tube, give no accurate information of the quantity of radiation emitted by the tube.

It was necessary to have some check upon the constancy of radiation from the Coolidge tube, and any irregularities in the intensity of its rays compensated by a proportionate change in the time of exposure. This check was provided by the use of a small gold-leaf electroscope placed in an adjacent room. An oblique beam of X rays from the Coolidge tube passed through holes in the walls and entered the electroscope, the rate of fall of the gold leaf serving as an indicator of the intensity of the X rays. Such observations were the prelude to all our X ray exposures, and from the general dispositions of apparatus this control could also be put into operation during the exposures if it were thought necessary. The distance of the electroscope from the anode was 6 metres; the air space between the anode and the animals was much less than this (viz., 30 cm.). Owing to the appreciable absorption of X rays by several metres of air the character of the X rays to which the animals were exposed was appreciably different to that of the beam entering the electroscope; so that the latter instrument could not be used as an absolute measure of the dose of X rays given to the animals. The radiation incident upon the animals has been measured photographically and compared with the photographic action of the beta rays from a measured quantity of radium bromide; the photographic imprints from a number of exposures were obtained upon the same photographic plate, which on development allowed of a direct comparison of tints, and could then be interpreted in terms of quantity of radiation.

The unit of reference employed in these experiments is that recently suggested by one of us[6]—viz., the rad—this is the quantity of radiation which, when absorbed by sarcoma cells, causes their eventual destruction on implantation into rats. The photographic impression of the X rays used during an exposure of 12 seconds was found to be equal to that of about 1/200 rad. During the course of this work we have looked upon a 12 seconds exposure as a typical "small dose," and the above comparison of quantities gives a general impression as to the quantity of radiation required for a lethal effect upon malignant cells and the very much smaller quantity of radiation responsible for the effects produced upon the blood which have previously been detailed in this paper.

### 7. *Discussion of Results.*

A brief survey of some salient experimental findings will preface a consideration of their bearing upon the radiological treatment of malignant disease.

1. The natural immunity which animals usually have towards the inoculation of spontaneous tumours can be broken down by an X ray exposure sufficient to cause the disappearance of the lymphocytes.[2]

2. The acquired immunity which results from the inoculation of blood or other cells into normal animals can similarly be destroyed.[3]

3. The acquired immunity which is found in animals in which tumours have disappeared can likewise be broken down.[1]

4. Tumour cells from a foreign species, which on inoculation will only grow with great rarity, multiply rapidly in an X-rayed animal, until such time as the depleted lymphoid system is well advanced in regeneration.[4]

5. Acquired immunity is destroyed only so long as lymphoid cells are reduced in number.[1]

6. In contrast to these actions, an immune condition can be produced instead of destroyed by suitable doses of X rays, vide Section 5, Fig. 5. Murphy and Morton, experimenting upon mice bearing spontaneous tumours, have obtained a similar effect. After removal of the tumours by operation the animals were given a small dose of X rays; grafts of the tumours were then reinoculated into the animals. In 26 out of 52 mice the grafts did not grow, and there was no recurrence at the site of operation in 41 of the animals. In 29 control animals similarly treated, except that they received no X rays, the grafts grew in 28 of the animals. Local recurrence occurred in 14 cases.[5]

X rays when administered to an animal have therefore two actions, quite apart from their direct effect upon a tumour: (*a*) A large dose of rays by destroying the immune condition will favour the growth of a tumour; (*b*) a small dose by producing the immune condition will help to control and may overcome the growth of a tumour.

The bearing of these facts upon the radiological treatment of malignant disease in man appears to us to be as follows. Whenever a tumour is exposed to X rays the lymphocytes circulating in the blood-vessels of the growth and of the surrounding tissues will be irradiated, or if the site of operation be treated the lymphocytes in the normal vessels and tissues will be similarly exposed. It is clear, therefore, that though the radiologist may be giving the primary growth the dose of radiation required for its disappearance, he may at the same time be indirectly encouraging the development of secondary growths by lowering the natural powers of resistance of the patient, especially if this comparatively large dose is repeated at fortnightly intervals, as in post-operative treatment.

It would appear profitable therefore to take all possible precautions to prevent the destruction of such cells as the lymphocytes, which, there is good reason to believe, play a defensive rôle in many varieties of malignant growth.

Finally, as regards the possibility of using X rays to increase the natural powers of resistance against cancer. It must be clearly understood that up to the present it is only resistance against cancer inoculations that has been increased. Nevertheless, there is a distinct analogy between a graft introduced experimentally and a lodgment of cancer cells occurring at a distance from a primary growth. By the use of small doses of X rays repeated at intervals it may be that the resistance against the development of secondary deposits can be increased in a similar way to that which occurs in the case of an experimental inoculation.

We take this opportunity of acknowledging our indebtedness to the Director of these laboratories for the facilities he has always given us. These and other researches are the outcome of his adherence to a line of investigation in cancer which had its origin in the basic fact that X rays cause carcinoma (vide Croonian lectures on Radio-activity and Carcinoma, Royal College of Physicians, 1909, THE LANCET, June 26th, 1909). We have also pleasure in recording our thanks to the British Thomson Houston Co. and the General Electric Company of Shenectady for their gift of the Coolidge tube used in these investigations.

*References.*

1. Mottram and Russ: Proc. Roy. Soc., 1917, B., xc.
2. Murphy and Morton: Jour. Exp. Med., 1915, p. 204.
3. Murphy and Taylor: Jour. Exp. Med., 1918, p. 1.
4. Murphy: Jour. Am. Med. Assn., 1914, lxii., 1459.
5. Murphy and Morton: Jour. Exp. Med., 1915, p. 800.
6. Russ: Archives Radiology and Electrotherapy, December, 1918.

FAMINE RELIEF IN BOMBAY.—The Government has made arrangements with the Bombay Improvement Trust to construct on their behalf temporary dwellings for immigrants into Bombay city from famine-stricken areas.

SOME REMARKS ON THE

# PSYCHOLOGY OF INTERNMENT,

BASED ON THE OBSERVATION OF PRISONERS OF WAR IN SWITZERLAND.

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AND

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ANY path of life which diverges from the ordinary and along which bodies of men find themselves obliged to travel will in a short space of time affect the mentality of the travellers. We observe, moreover, that the same objective influences operating upon different minds often produce psychical results of striking similarity. We would cite by way of example the interesting observations which have been made upon the crews of sailing vessels during long voyages, upon the members of Arctic expeditions held fast in the pack-ice throughout the endless Polar night, and upon exiles in Siberian prisons. But what is certainly the most extensive field for the study of these phenomena is to be found in the internment camps wherein are congregated the myriad prisoners of war.

### "*Barbed Wire Disease.*"

Here it is no longer a question simply of the development of a collective mentality more or less stereotyped; but in relatively large numbers of cases, either because of the intensity and long duration of the noxious influences or because of the neural plasticity of certain prisoners, we are concerned with the development of a very characteristic psychoneurosis to which there has been given the symbolical title of "*psychose du fil de fer barbelé*," in German "*Stacheldrahtkrankheit*" and in English "barbed wire disease." This name seems to have originated in Switzerland, though its exact origin cannot be certainly determined; it has established itself so thoroughly that already it is to be found in international treaties—for example, in Para. 4 of the Germano-Britannic Convention of The Hague on the internment of prisoners of war in Switzerland (July, 1917).

One of us has contributed a detailed monograph to the study of this complaint.[1] Here we shall limit ourselves to a brief outline.

There are essentially three abnormal conditions reacting on prisoners of war: the deprivation of liberty, the heaping together of the prisoners one upon another, and the uncertainty of the duration of their internment. "Space" is for them the limit of their enclosure; the use of their time is controlled by strict regulations. They may write once a week only and then not what they would like to write; their correspondence is read both on arrival and on departure. The constant waiting for letters and parcels, which arrive at very uncertain intervals, engenders a regular habit of mind. Being cut off from all relations with those of the opposite sex they are the prey of their unrealised desires, from which sexual aberrations frequently arise. They are condemned to live constantly in a society which is monotonous even though it is peculiar and can have no privacy; their every action, however intimate, vaunts itself in the eyes of the whole assembly. The nervous irritation generated by this promiscuous herding reacts with especial force upon the more sensitive personalities.

### *Mentality of Prisoners of War.*

And all this must be endured for an unlimited period of time! It is otherwise with the felon who looks forward to the date of his release. The prisoner of war searches the newspapers with eagerness for any communiqué which may seem to give hope of peace, or for some suggestion that he may be transferred to a neutral country for internment. All his thought is concentrated in these hopes whose intensity varies as the possibilities of relief, real or imaginary, which his mind encompasses. At first the prisoners seek in a feverish activity the antidote to all these trials; trials which in no way diminish their recollection of the horror through which they have passed, nor the anxiety with which they look forward to the future, nor the constant home-sickness to which they are already subject. Schools are opened, circles are formed, conferences, theatricals, and concerts are organised, and the love of sport abounds. Then little by little outside interests withdraw themselves and disappear; the prisoners come to live in a grey and dreary shadowland where the music is muffled and flat. Their emotions become blunted and give place to apathy. Even the war news is followed distantly and with but scant interest.

Such is the background from which appear in a large number of prisoners the symptoms of a neurasthenia *sui generis*—symptoms which are more pronounced in one, more distinct in another, but recognisable in most of those who have lived for more than six months behind the barbed wire fencing, and which in about 10 per cent. of all prisoners reach a high level of intensity. The first sign to appear is an increase of irritability. The men will no longer suffer the slightest contradiction; they become irascible, argumentative, obstinate, and in their endless discussions they exhibit a characteristic lack of judgment. There is a great deal of quarrelling. The power of concentration is now greatly diminished. This pathological fatigue, which often makes it impossible to read even a few pages consecutively, may have its counterpart in the motor system, and in this case the prisoner will deliberately sacrifice the little exercise to which he is entitled.

The prisoners complain with striking constancy that they lose their memory of people and of places, in so far as these relate to pre-war events. We shall return to this point, which is of quite special interest.

Among the secondary symptoms may be mentioned insomnia; in many camps it is widespread, in others it plays an unimportant part. Some prisoners complain of diminished vision; this asthenopia is particularly noticeable in artificial light. Many of them grow very suspicious. All have a marked tendency towards pessimism, and see every incident of their daily life in the gloomiest light; the worst cases often go for three or four days without speaking a word, plunged in a kind of torpor. Sexual impotence is very common. All these symptoms, once they are established, generally remain stationary, and rarely diminish so long as the internment lasts.

### *Effect of Neutral Internment.*

It is possible for what is, unfortunately, a strictly limited number of these patients to shorten the term of their imprisonment by internment in a neutral country. We were interested in observing the effect which this transfer had on the nervous and psychical anomalies discussed above, and we shall give a résumé of our observations. We tender our heartiest thanks to Dr. Clément, the principal medical officer of the hospital for interned prisoners at Fribourg, for the interest he has taken in our research, and for his courteous assistance during our sojourn at this hospital. Neutral internment is something altogether new; it might be expected that by its agency one would realise the saying, *Cessante causa, cessat effectus*, and that the nervous and psychical disturbances resulting from imprisonment would rapidly disappear in a neutral country. This optimism would not be altogether justified except as regards the unnatural irritability, which usually disappears in the first few weeks on Swiss soil.

Intellectual instability and loss of concentration are, on the other hand, symptoms which last a long time and in which improvement takes place very slowly. The British prisoners have defined this condition very aptly as "a difficulty in settling down." Only by the greatest effort do many prisoners succeed in confining themselves to a single occupation and their thoughts to one order of ideas. And it is not only of work in its strictest sense that we are concerned here; very often they are unable even to attend a kinematograph performance, for at these entertainments their mental exhaustion betrays itself by a growing restlessness, which finally arrives at such a point that they are obliged to leave the hall.

### *Disturbances of Memory.*

Perhaps the most remarkable of our observations were those upon the disturbances of memory. These were very

[1] A. L. Vischer: Barbed Wire Disease, London, 1919; see also Dr. A. Repond: L'hystérie chez les Prisonniers de Guerre Internés en Suisse in Les Archives Suisses de Neurologie et de Psychiatrie, vol. III., fasc. i., Zurich, 1918.

frequent even amongst the men who had been living in Switzerland for a considerable time. This symptom, while apparent to the patient, is at the same time quite easy to observe objectively by psychological methods; it is distinguished from the other mental phenomena of the internment psychoneurosis by the fact that it alone is altogether foreign to simple neurasthenia, and it is therefore the hallmark of that variety of neurosis with which we are occupied.

We have already remarked that this type of amnesia refers to pre-war events. There follow a few examples of which we could give many more.

A sergeant-major has forgotten the name of the colonel who has commanded his regiment since 1913 and up to the present time has been unable to recollect it. Many of those interned are no longer able to recall the Christian names of their father, their mother, or other near relatives, one of them could not remember even the name of his village. Another, who in civil life was a lawyer, being asked by a colleague for information on a trial in which he had greatly concerned himself formerly was now unable to answer the question; so completely had he lost this memory that he did not even recognise the name of the client in question. And all this among men who had been in Switzerland for a year and a half or even more.

*Other Mental Symptoms.*

Of those symptoms which we have called secondary the insomnia and the impotence disappear early on in the majority of cases, whilst the oculists of the interned districts are not infrequently called on to deal with persistent asthenopia unaccompanied by any abnormality of the eye or its accessories.

Over and above the symptoms which we have just analysed individually, many of the interned men give one the impression of a personality that has been profoundly changed. Their families who come to see them find them completely altered. Those who have to transact business with them complain of their exacting nature. An elderly general who some time ago visited his fellow-countrymen interned in Switzerland, summarised his conclusions in this way: "It is now 40 years since I joined the service, and I think I have learned to know thoroughly the officers and men of our Army. I have just been visiting my comrades who are interned, and I have to confess that there are men whom I no longer understand."

Among the intellectuals there is often evident an extreme sensitiveness, as a result of which the smallest details are liable to give them pain. They tend, in spite of themselves, to misunderstand some gesture, some change of expression, the tone in which some simple phrase is uttered, or even a silence. One notices also at times a certain shyness, leading them to seek that solitude of which they have so long been deprived. "It is not misanthropy," one of them told us, "it is neither a distaste for, nor a distrust of, my fellows, it is simply the want of pleasure in their company, and, perhaps, a certain discomfort in being amongst those who are not in my condition." This explanation exhibits a consciousness of abnormality. In many this feeling is even more marked than it was during their imprisonment, when external circumstances provided an explanation, or, shall we say, a plausible excuse for the change in their mentality. Thus many believe that their nervousness has grown worse in Switzerland. Certainly this is not the case, and the objective study of these men allows us even to assert that this nervousness gradually decreases as a result of their changed environment; their mistake is none the less easy to understand.

While it is true that in certain regions there must, in the nature of things, be a certain amount of military discipline, enforced in a militarist spirit upon men who have no military occupations to justify such discipline, and while such a life has something artificial about it which hinders a return of the sense of realities, we cannot too strongly insist on the good influence that some of the men derive from the visits of their relations. By this means a living contact is re-established with the family—that is to say, with the fundamental basis of social life.

The study here contributed is but a slight one; the problem deserves more extensive research. These observations will, we believe, suffice to make manifest in a new light the great humanitarian value of neutral internment.

SOME CASES OF

# GUNSHOT WOUNDS AND OTHER AFFECTIONS OF THE CHEST

TREATED BY BREATHING AND PHYSICAL EXERCISES.

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THIS article is supplementary to one that appeared in THE LANCET of Oct. 2nd, 1915, and to a paper on Gunshot Wounds of the Chest read at the Medical Society of London on Jan. 17th, 1916,[1] where a description of suitable exercises for use in traumatic affections of the chest was given.

*Conditions in which the Exercises are of Value.*

A very large experience of chest cases, among them 160 officer patients, in several hospitals for the wounded, including St. Bartholomew's, Guy's, the Royal Free, No. 1 London General, King Edward VII.'s, Princess Henry of Battenberg's, 17, Park-lane, Londonderry House, the Russian, and Lady Ridley's Hospitals, has shown how very important it is that, where there is serious lung collapse and chest deformity, following wounds or illness, breathing and physical exercises should, in certain cases, be given as accessories to medical and surgical treatment, if the best possible recovery is to be assured.

Cases of hæmothorax, gassing, phthisis, scoliosis, congenital deformities of the chest and collapse of the chest walls after pneumonia have been treated under medical advice, as well as cases of children with impaired upper-costal development due to hypertrophied tonsils and adenoids.

Empyema cases have been largely treated, and several cases have had the exercises applied within a short time, but not sooner than 12 days, after resection of the rib and insertion of the drainage-tube. Some few cases, perhaps 10 in all, have not responded to the exercises, and it was considered wise to discontinue them. Several severe cases have responded well, and have proceeded to complete recovery.

In a large number of cases there were painful adhesions of the pleura, and in a few cases of pleura and diaphragm. The particular exercise for breaking down the latter is described at the end of this article (Exercise No. 14).

Great assistance in making a collapsed lung function properly is rendered by bending the body away from the injured side, as the patient lies on his back. This position causes a partial collapse of the sound lung by mechanical pressure of the ribs. Also, when possible, the patient should lie on the injured side when preparing for sleep.

Some additional exercises are added to those which originally appeared in THE LANCET and the full set of exercises is set out later.

*Illustrative Cases.*

The following cases exemplify a variety of the cases treated and are given with the kind permission of the physicians and surgeons at whose request each case was treated.

*Gunshot Wounds of the Chest.*

CASE 1. Lieut. W. J. W.—King Edward VII.'s Hospital. Patient of Sir William Hale White. Empyema. Wounded Nov. 20th, 1915. Bullet entered back under right scapula, exit wound fourth rib near sternum. Rib resected Dec. 24th. The exit wound was lacerated and was discharging pus when exercises were begun. The patient looked weak and ill. Exercises were commenced on Feb. 13th, 1916, and continued in hospital for three weeks when patient was sent to a convalescent home. The progress was uninterruptedly good and the patient made a complete recovery.

CASE 2. Mr. R. S. T.—Patient of Sir Arbuthnot Lane. Shot through left lung Feb. 29th, 1916. Entrance wound in left axilla, exit wound near spine on slightly higher line. Aspirated March 20th, 100 oz. of sanious fluid withdrawn. Lung and chest wall collapsed and left side very immobile. Exercises given from April 8th to May 10th, the patient continuing them afterwards. He made a complete recovery, and was able to play cricket and tennis by the following July.

CASE 3. Sergeant A. M.—St. Bartholomew's Hospital. Patient of Captain Douglas Harmer. Wounded September, 1914. Penetrating shrapnel wounds of the muscles and pleura on right side. Painful adhesion between pleura and diaphragm. Dyspnœa on exertion. The movements of the right arm were very limited. Exercises commenced on Oct. 26th, 1914, and continued at the hospital for four weeks, after which the patient carried them out for himself. When seen a few weeks afterwards the patient's condition was excellent and there was free use of the arm in all directions. After a period of home service he returned to France.

[1] See Vol. xxxix. of the Society's Transactions.

CASE 4. Captain T.—Lady Ridley's Hospital. Patient of Dr. R. C. Wingfield. Wounded Sept. 15th, 1916. Bullet *in situ*. This patient had a bullet wound in left chest and developed an infected effusion in the right chest, which was drained. He had continual pain from an adhesion probably between pleura and diaphragm on the side of the injury. This was broken down in a few minutes by applying Exercise No. 14. Exercises commenced Dec. 2nd, 1916, and continued for about three weeks. On discharge condition was excellent.

Dr. Wingfield has kindly added this note on the case: "At the end of the course his left lower lobe appeared to be functioning extremely well, with scarcely any evidence of disability due to fibrous or pleural adhesions."

CASE 5. Captain R. S.—Princess Henry of Battenberg's Hospital. Patient of Dr. Rice-Oxley. Hæmothorax. Wounded Oct. 31st, 1914. This was a particularly interesting case, as the bullet passed through the wall of the heart and then into the left lung, lodging in its lower posterior portion. For a long time the patient looked very ill and was acutely and distressingly dyspnœic. Exercises were commenced very carefully on Jan. 11th, 1915, and were carried on for three weeks and afterwards by the patient himself, further exercises being given at intervals. Present condition is very satisfactory. The patient can stand a long day at his duties and can take horse exercise without being unduly tired.

CASE 6. Major M.—Dorchester House. Patient of Sir Alfred Fripp. Hæmothorax. Wounded Sept. 28th, 1915. Entrance wound right shoulder; exit wound by sixth rib at back. Lung and chest wall collapsed. Exercises given from Nov. 7th to Dec. 4th. Good report on discharge, except that there was still slight flattening in right apex region.

In returning the notes of this case Sir Alfred Fripp kindly writes:—"I am glad you are publishing some of your cases, for, in common with many physicians and surgeons who have watched the effects of your treatment, I feel greatly indebted to your work on behalf of many of my patients recovering from gunshot wounds of the thorax and think that the work cannot be too widely known."

CASE 7. Major G.—Mrs. Hall Walker's Hospital. Patient of Dr. John Fawcett. Pneumonia and empyema following gunshot wound of chest wall. This patient developed an empyema subsequent to pneumonia and pericarditis. The empyema was opened and drained. The exercises were commenced after the acute stage had passed, resulting in improved drainage from the pleural cavity. There was one sharp rise of temperature during the time that the exercises were being carried out, but on its subsidence the patient progressed to complete recovery. The exercises were given over a period of six weeks.

*Empyema following Pneumonia.*

CASE 8. Miss M. H.—Patient of Sir Arbuthnot Lane. Pneumonia December, 1915. Whilst about to operate in 1917 on this patient for appendicitis Sir Arbuthnot Lane noticed very impaired movement of right upper chest and advised that she should have breathing exercises when well enough after her operation. Exercises given at intervals from June 7th to August 3rd, 1917, the chest wall was completely restored and the lung functioned perfectly.

CASE 9. Mrs. B.'s son.—14 years of age. Patient of Dr. P. F. Barton and Dr. J. J. Perkins. Empyema following pneumonia. This case was very severe as to lung and chest collapse. There was a remarkable appearance when the boy stood up, the body being bent over to the left to an almost incredible extent. Breathing exercises were commenced four weeks after resection of rib. The progress was continually good and the empyema wound soon healed. The lung and chest wall recovered a practically normal condition, and the boy was looking and feeling perfectly well at the end of his treatment. Breathing exercises commenced August 4th, 1916, and continued to Nov. 21st. Seen 12 times. Weight increased during treatment from 6 st. 9 lb. to 7st. 13½ lb.

Dr. Barton has kindly supplied the following details as to the patient: "The arm was held tightly to the side, any movement of it producing great pain. There was a strong nervous element in this case in addition to the extreme physical disability. Nothing could be done until the boy's confidence was re-established. The exercises had a very marked effect on this, as the boy at once felt the benefit of them. He is now, November, 1918, very fit and well and would have got a commission quite easily."

CASE 10. A. B.—Patient of Dr. H. Morley Fletcher at St. Bartholomew's Hospital. The patient was a little boy. Empyema of two years' standing. Left lung and chest wall severely collapsed. Large drainage-tube and much discharge when exercises commenced. Body bent over very severely and head almost resting on shoulder. Came into hospital November, 1915. Exercises commenced Dec. 9th and continued until end of February, 1916. The patient made excellent progress. The empyema wound was soundly healed and the lung and chest wall and body posture restored to a very large extent. A strong body belt was worn for some time to rectify the severe scoliosis.

Dr. Morley Fletcher has kindly added the following note on this case: "The thoracic deformity was very marked, and the result obtained by Mr. MacMahon's treatment of exercises was extremely good; in fact, far better than I had anticipated or should have believed possible. When I last saw the boy he was in good condition and showed comparatively little deformity."

*Gunshot Wounds and Other Cases.*

CASE 11. Lieut. R. Y. K.—Mrs. Herbert Samuelson's Hospital. Patient of Dr. Percival White. Gunshot wound of chest. Entrance wound level of twelfth rib. Metal *in situ*. This patient had a painful adhesion between pleura and diaphragm. The adhesion caused great discomfort in all positions. It was broken down in a few minutes by using the 14th Exercise described later. The patient made a rapid recovery.

CASE 12. Lieut. B. O. J.—Princess Henry of Battenberg's Hospital. Patient of Dr. Rice-Oxley. Wounded August 28th, 1915. Septic hæmothorax. Drainage-tube inserted. Patient had been very ill, and when exercises were commenced he was very weak and depressed. Exercises commenced Oct. 12th and continued to Nov. 4th. Progress excellent, except for one sharp rise of temperature lasting two days. On discharge on Nov. 4th he was thoroughly satisfactory.

CASE 13. C. H. D.—11 years of age. Patient of Dr. Still. This case is given to show the increase in weight and general physical development as a result of the exercises. When first seen on Nov. 13th, 1912, the boy weighed 6 st. 12½ lb.; greatest chest expansion 29 in. On Jan. 15th following weight was 7st. 6¾lb.; greatest chest expansion 31 in. On Oct. 28th, 1913, weight 8st. 9¼lb.; greatest chest expansion 33 in.

CASE 14. Lieut. H. H. K.—Dorchester House. Patient of Dr. Cameron. Hæmothorax. Wounded Jan. 21st, 1916. Bullet entered left shoulder and remained *in situ* near left lumbar spine. Hæmaturia due to kidney being injured by the bullet. Left lung severely collapsed and great pain in region of heart. Exercises commenced March 17th and continued for about 2 months. Progress slow, but eventually the patient made a good recovery.

CASE 15. Trooper W.—No. 1 London General Hospital. Patient of Major H. Morley Fletcher and Captain Lionel A. Crossman. Captain Crossman has supplied excellent notes of the case. In April, 1916, this patient put on 18 lb. in weight in 14 days.

"Trooper W., aged 19, developed in October, 1914, a left-side empyema following a kick from a horse; and portion of rib resected and the empyema drained. During the next 12 months five operations were performed for the evacuation of large pockets of pus in the pleural cavity, and at the fifth (October, 1915) portions of fifth, sixth, seventh, and eighth ribs were removed. In January, 1916, his wounds were soundly healed, but he looked ill, was obviously dyspnœic, the left side of the chest was practically immobile, and the heart displaced to the right. On Jan. 10th, 1916, resection of part of sixth rib in mid-axillary line was performed; a large quantity of pus was evacuated and the empyema cavity drained. Early in February, 1916, breathing exercises were begun under the direction of Mr. MacMahon and were continued until his discharge from hospital. In March, 1916, the drainage-tube was removed and the sinus rapidly closed up and has not given the slightest trouble since. When he left the hospital on May 20th, 1916, to return to duty he looked and felt perfectly well; the air-entry over the whole of the left lung was excellent and he could run up 100 stairs with remarkable rapidity and ease."

*The Exercises Described.*

The exercises are as follows. Only a few should be carried out at each treatment, and the advance through the exercises should be gradual and special exercises selected to suit the individual condition. Each particular exercise should be carried out 18 times with a rest after each six movements of the exercise. All exercises should be carried out in a recumbent position with the head and shoulders slightly raised.

1. The operator places his hands on the side of the lower ribs level with the breast-bone. The patient should breathe in through the nose and the lower ribs should be felt to be expanding strongly. There should be as little movement as possible of the upper chest. When the fullest inferior lateral costal expansion is acquired the patient should breathe out through the open mouth and the ribs should be felt to regain their normal position.

2. The patient should breathe in in three distinct movements, and the lower ribs should be felt to expand with each breath.

3. The abdominal wall should be contracted inwards and then allowed to recover its normal position, so that an in-and-out movement is made. (This is a physical and not a breathing exercise, and can be carried out 20 to 50 times.)

4. Combine the above movements—i.e., the patient breathes in through the nose, and the lower ribs are felt to be strongly expanding. The mouth is opened wide and the abdominal muscles slowly and strongly contracted, so that the air is driven from the lungs.

5. The same inspiratory movement, but the breath should be held and the abdominal muscles contracted in three to five deliberate movements before breathing out.

6. The patient should breathe in deeply, the breath should be held and two more breaths taken in through the nose, and, as air is inspired, two simultaneous contractions of the abdominal muscles should be made. These movements send the air to the apices of the lungs.

7. Bend the body laterally away from the side of the injured lung to the fullest extent, so that the uninjured side of the thorax is partially compressed. The patient is on his back, and the head and feet are drawn round as far as possible. The operator should press over the uninjured lung with both hands and the patient should breathe, as before, in through the nose and out through the mouth, contracting the abdominal muscles as he breathes out. (When there has been considerable collapse of the ribs on the side of the injured lung, and especially when there has been an abscess in the lung, great care must be taken in doing this movement, otherwise considerable muscular discomfort will occur within a few hours. A certain amount of pain will necessarily be felt if there has been a serious collapse in the chest wall, but this can, of course, be relieved.)

8. The same movement and position, but the operator should press with his hands on the side of the uninjured lung with a pressure of 30 to 60 lb., and the patient should contract the abdominal wall, with the breath held, at first once, afterwards increasing by degrees to five times.

The following exercises are done with the breath held:—

9. Grasp the wrists of the patient as the arms lie at the side of the body, the operator standing behind the patient. Draw the arms outwards and upwards to above the head, pull on the arms steadily when the arms are at their fullest extent, then relax the pull. The patient should then breathe out quickly.

10. Arms as before. Bring them together in front and carry upwards to a right angle. Part the arms strongly backwards and horizontally.

11. The same exercise as the preceding one, but the arms are carried backwards at an angle of 45° upwards.

12. Commence with the patient's arms above the head, with the palms of the hands facing each other. The operator grasps the arms between the wrists and the elbows and presses the arms strongly downwards, and when the elbows approach the sides the abdominal muscles should contract. Force the elbows into the side and make the patient breathe out strongly.

13. Grasp the right wrist of the patient with the left hand, carry the arm forwards, and bring it to a right angle with the body. The operator should then place his right hand well under the scapula of the patient and pull the arm backwards and downwards as the patient strongly contracts the abdominal wall. Changing the hands, do the same movement on the other arm of the patient.

14. When there is a painful adhesion between pleura and diaphragm, the operator should stand behind the patient whose arms are fully extended above the head. The patient should then take three deep breaths, expanding the lower ribs as he does so, and as each breath is taken the operator should pull very strongly on the arms. If the patient is of light weight the legs should be held so that the body cannot move.

The average number of attendances on a patient is about ten. Severe cases are given the exercises for several weeks. In all cases the exercises should be continued by the patient himself for at least three months after he is convalescent. The exercises should be carried out twice a day half an hour before meals.

Wimpole-street, W.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTIONS OF OPHTHALMOLOGY AND LARYNGOLOGY.

THE further combined meeting of these sections was held on April 10th, Dr. JAMES DONELAN, the President of the Section of Laryngology, in the chair, when the debate was resumed on

*Injuries and Inflammatory Diseases Affecting the Orbit and Accessory Sinuses.*[1]

Mr. W. M. MOLLISON said a large number of the cases of the kind under discussion he saw after Mr. Ormond had been treating them for their ocular troubles, and in some the injury was received some months before. It was obvious that much time might have been saved and a good deal of suffering spared to a number of patients had an ophthalmologist and a rhinologist seen them at an early stage, for the latter could have carried out drainage into the nose before the attempt was made to repair sockets or lids. Sometimes the latter was undone and discharge persisted. For the purpose of the discussion he divided his cases into two categories: (1) through-and-through wounds, (2) all other wounds. The results of the first of these were the formation of adhesions between the septum and the outer wall, with, generally, the involvement of the ethmoid as a sequel of obstructive infection. All the cases he saw were blind, most of them absolutely so. After operation in one case to restore the nasal air-way between the septum and ethmoid, though for three days the result appeared to be good, infection of meninges occurred, which proved fatal. In some there was parosmia, probably due to damage to the olfactory nerve. In some instances foreign material had been driven into the frontal sinus; in one case it was found five months after the date of the wound. Among the men he saw at St. Dunstan's the frontal was the most frequently affected sinus. With regard to the inflammatory diseases of the orbit, he had not seen any case of sinus suppuration in connexion with retrobulbar neuritis, though his custom was to explore carefully with a Killian's speculum. He had had a case of severe orbital cellulitis in a woman which could be called idiopathic, for the cause could not be traced. In two days she died of most extensive pyæmia. In 99 per cent. of the cases of orbital cellulitis he thought the origin of the trouble must be in the frontal sinus.

Mr. J. F. O'MALLEY said he had notes of about 60 cases of nasal and accessory sinus trouble, which involved also lesions of the eye and lacrymal apparatus. In wounds of the ethmoid cells he had found that where there was evidence of previous obstruction one invariably found sepsis, necessitating thorough drainage. But he had been struck by the fact that in a large percentage of the ethmoid wounds he saw there was little or no sepsis, and nothing beyond removal of adhesions to establish ventilation was called for. Once a free air-way was restored wounds seemed to heal up with remarkable rapidity; in contrast with the cases of ethmoid involvement in ordinary inflammatory conditions of the nose. The same was true of antral lesions, but of 50 through-and-through wounds of the antra he had to operate on only 11 for sepsis, and in those there was an open wound into the sinuses. In 11 others he operated to remove a foreign body.

Mr. W. STUART-LOW spoke of cases which had been sent to him at hospital suffering from an acute inflammatory condition of the frontal sinus which was extending to the canthus, causing, in some instances, closure of the eye. Some were sent away without operation, for the middle turbinal was found to be swollen, and packing once or twice with cocaine and adrenalin permitted of observation, and pus was seen coming from the sinus, and after fomentation the sinus inflammation subsided. If this method were more often carried out many operations on the sinus would would be obviated. Often he was able to relieve tension in the sinus by suction when the tension was due to accumulation of serous fluid. He objected to washing the sinus out, because of the risk of infecting other sinuses by driving the purulent material into them. In some of his cases of acute and subacute swelling of the antrum there was originally periostitis, with subsequent extension of the inflammations to the soft structures. In antral cases he advocated and practised frequent washing out, as though its partition was thin it was complete. He did not agree with the attempts to remove foreign bodies which were not causing obvious trouble, unless they were readily accessible.

*Exhibition of Slides.*

Mr. HERBERT TILLEY exhibited a number of slides, the first of the series in illustration of the fact that even at 3 years of age the ethmoidal cells and sphenoidal sinus were developed, the prevailing view having been that they were formed at a later stage. He had at present in hospital a boy, aged 5 years, who had suffered from orbital cellulitis, with frontal sinus and ethmoidal cell suppuration. He said there were cases in which suppuration in the right sphenoidal sinus affected the left, or contralateral, optic nerve, causing retrobulbar neuritis. He commented on the rarity with which a patient with sinus trouble complained of eye symptoms, even when he was asked about them; also the infrequency with which he had been able to find nasal lesions in cases which had been referred to him by his ophthalmological colleagues because of their having unilateral retrobulbar neuritis. His explanation was that by the time the case reached the rhinologist the nasal infection had drained away and become cured. In some eye cases in which nasal trouble was found the relief from the treatment of the latter was so rapid as to suggest that the defect had been due to pressure rather than to sepsis. It was very unwise for the nasal surgeon to attack by radical measures an acute intranasal infection, because of the danger of setting up a condition of things which might be disastrous to the eye, or even to life. At that stage the surgeon should be satisfied with providing free drainage. He had seen iritis, cyclitis, and some internal affections of the eye absolutely cured by intranasal operations.

Mr. LAWSON WHALE emphasised the main lessons he had derived from his war experiences in France and England by describing an interesting series of slides which he exhibited by means of the epidiascope.

*Replies to Discussion.*

Mr. SECCOMBE HETT, in the course of his reply, said it was very desirable to ascertain by means of statistics the frequency of the association of sinus disease or pressure of fluid in the sinuses with signs of retrobulbar neuritis. Probably members of the two sections could compile such statistics.

Mr. L. V. CARGILL also briefly replied, supporting Mr. Hett's plea for statistics. Dealing with Mr. E. D. D. Davis's remarks concerning fracture of the skull, he said Lagrange laid it down that if a shell wound involved the antra, crossing the face below the orbits, there was not necessarily a lesion of the macula.

Mr. A. W. ORMOND, in his reply, said the trend of opinion seemed to be that disease of the sphenoidal sinus and of the posterior ethmoidal cells was the most probable cause of the cases of retrobulbar neuritis, and that disease of the antrum and frontal and ethmoidal sinuses was probably not a causative factor in affecting the optic nerve. It also seemed clear that the maxillary, frontal, and ethmoidal sinus affections were more commonly the causes of the cases of orbital cellulitis found in children. If that were so the ground was cleared a good deal.

Mr. E. D. D. DAVIS also briefly replied.

[1] THE LANCET, 1919, i., 614.

# MEDICAL SOCIETY OF LONDON.

A MEETING of this society was held on April 14th, Dr. A. F. VOELCKER, the President, being in the chair, when clinical cases were shown.

*Polycythæmia.*

Dr. J. WALTER CARR showed a case of Symptomatic Polycythæmia. The patient, a man aged 22, had always been very delicate, suffering much from dyspnœa and exhaustion on any exertion. He was also subject to severe attacks of giddiness, sometimes every day; these sometimes went on to loss of consciousness, occasionally lasting three-quarters of an hour, and convulsive movements. He was extremely cyanosed and his fingers and toes were clubbed. The heart was a little enlarged to the right but was otherwise normal; no murmur could be heard. Blood count: red corpuscles, 8,200,000 per c.mm.; white corpuscles, 7200 per c.mm.; hæmoglobin, 136 per cent.; colour index, 0·8. The differential count was normal. The blood pressure was equal to 120 mm. Hg. Venesection to the extent of half a pint had temporarily relieved the cyanosis. There was no enlargement of liver or spleen. The urine was normal. The exhibitor said that in the absence of any enlargement of the liver or spleen the case could hardly be regarded as one of idiopathic polycythæmia (Vaquez's disease), and the question arose as to whether it was an example of congenital heart disease without a murmur.

In the discussion which followed Dr. PARKES WEBER agreed that the case was not an example of the condition best called splenomegalic polycythæmia, but was probably one of polycythæmia secondary to a large hole between the ventricles. In splenomegalic polycythæmia the cause of the cyanosis was of interest. There was clearly some slowing of the circulation. One view ascribed this to an increased viscosity of the blood; another to slight cardiac failure. It was possible that cases were free from symptoms for a considerable time and only presented themselves for examination when the failure and cyanosis supervened.

*Congenital Morbus Cordis with Polycythæmia.*

Dr. CARR also showed a case of Congenital Morbus Cordis with Polycythæmia. The girl, aged 16, had always suffered from breathlessness on exertion and occasionally from attacks of precordial pain. She had had four attacks of rheumatic fever, but otherwise her health had been good. There was a loud rough systolic murmur accompanied by a well-marked thrill in the pulmonary area. The murmur was heard less loudly all over the precordium and the back. The apex beat was in the fifth space in the nipple line, and the heart was slightly enlarged to the right, and blood pressure equalled 130 mm. Hg. Blood count: red corpuscles, 7,000,000 per c.mm.; white corpuscles, 8300 per c.mm.; differential count, normal; hæmoglobin, 112 per cent.; colour index, 0·8. There was slight clubbing of the fingers and a little cyanosis.

The PRESIDENT pointed out that it was unusual that in this case, which on examination of the chest presented the features of pulmonary stenosis, there should be so little cyanosis and no definite clubbing.

Dr. F. S. LANGMEAD, while agreeing that in cases of pulmonary stenosis the most extreme degrees of cyanosis and clubbing were met with, said that he had often found a very loud murmur and considerable thrill in the pulmonary area in children who were quite free from symptoms of any kind.

*Polycythæmia Rubra with Splenomegaly.*

The PRESIDENT showed a case of Polycythæmia Rubra with Splenomegaly. The patient was a man aged 64. The family history was unimportant. The man had had pleurisy 30 years ago, but no other illnesses until 12 months ago, when he began to complain of pain across the abdomen and afterwards of pains in the back and in the veins of the legs. The pain was made worse by the recumbent position. There was cyanosis of the ears, face, hands, and feet, and of the mucous membranes (conjunctivæ, lips, mouth). The veins were turgid, but their walls not thickened. The spleen was enlarged, not tender, and reached for three fingers' breadth below the costal margin. There were no valvular lesions of the heart. A trace of albumin was present in the urine. Blood count: red corpuscles, 11,320,000 per c.mm.; white corpuscles, 5,900; hæmoglobin, 126 per cent. Differential count: polymorphs, 72 per cent.; lymphocytes, 22 per cent.; hyalines, 3 per cent.; eosinophils, 1 per cent.; basophils, 2 per cent. The blood pressure equalled 135 mm. of mercury.

*Aortic Aneurysm.*

Dr. EDMUND CAUTLEY showed a case of Aortic Aneurysm and ? Gumma in Mediastinum. The man, aged 34 years, was admitted to hospital in March, with a history of attacks of breathlessness and pain in the right side of the chest for 13 months, induced by slight exertion, such as going upstairs. The attacks had increased in severity for four to five months, and he had a constant dull ache in the right side of the chest. According to his past history he had never had a day's illness before this. He was a well-built and strong man, and presented the usual signs of a large aneurysm of the aorta, with bulging of the region from the second to the fourth ribs on the right side near the sternum and pulsation over this area. The cardiac apex was in the nipple line in the sixth interspace. There was some impairment of resonance, with increased vocal resonance and rather harsh respiratory murmur, over the right lower lobe behind. The systolic blood pressure was 120. The Wassermann reaction was positive. The X ray photographs showed, in addition to the aneurysm, a circular tumour about the size of a Tangerine orange in the mediastinum on the right side. It pulsated and was closely adjacent to the heart, possibly in the wall of the heart or an aneurysmal dilatation thereof. The movement of the right half of the diaphragm was impaired.

*Severe Anæmia.*

Dr. CAUTLEY also showed a case of Severe Anæmia in a man, aged 57 years. For 18 months the patient had been gradually going downhill and feeling weak, low, and lacking in energy. He had been losing flesh and had occasional gastric pain, but no vomiting, hæmatemesis, melæna, or hæmoptysis. He was admitted to hospital about a week ago, and no cause had been found for the anæmia, which was apparently of the secondary type. Report on the blood by Mr. J. Andrew showed: Hæmoglobin, 20 per cent.; colour index, 0·5; red cells, 2,080,000; white cells, 13,200; polymorphs, 78·5; lymphocytes, 20·0; large mononuclears, 0·5; eosinophils, 0·75 per cent. In a count of 400 cells, one myelocyte was present. There were poikilocytosis and microcytosis. The Wassermann reaction was negative. A skiagram of the chest showed a well-marked bronchial tree and deficient movement of the right side of the diaphragm. The apices of the lung did not light up well. After a bismuth meal the peristaltic movements of the stomach were well marked and the stomach empty four hours later. (Dr. H. Mowat). No evidence of blood parasites or ova had been found in the stools. The patient had ascribed his condition to shock connected with an air raid.

*Cœliac Disease.—Cirsoid Aneurysm.*

Dr. CAUTLEY also showed a case of Cœliac Disease. The child, a boy aged 3¼ years, was one of 8 children, of whom 3 were dead. He was admitted to hospital six months ago, with a history of passing three or four loose, offensive stools daily for a period of two years, and for abdominal distension. Two years before admission he had measles, and whooping-cough 16 months later. He was in an infirmary for a year, being discharged in September, 1918. On admission he was very emaciated and marasmic, and weighed 21 lb. 4 oz. The abdomen was large and tympanitic, the appetite good, and the stools loose, clay-coloured, and offensive. For the last six months he had continued more or less in the same condition, though slowly improving and gaining weight, in all about 4 lb. Sometimes he would gain rapidly, and then for no apparent cause would lose weight with almost equal rapidity. At intervals he would "go off his feet." The stools had occasionally presented a little colour and had frequently become of the consistency and appearance of porridge, and free from the offensive smell. A recent report on the urine and fæces by Mr. R. L. Mackenzie Wallis was as follows: Urine clear, pale yellow colour, free from sugar, diastase 32 units; normal 10–22·2 units; over 100 in pancreatic insufficiency. Fæces: Greyish and pasty stool with slight rancid odour and strongly acid; small amount of mucus; no urobilin or bile pigments; benzidine test for blood, negative. Microscopically, several refractile fat globules seen: abundant crystalline needles of fatty acid. No muscle fibres or starch granules. Several undegenerated epithelial cells and

a few spiral vessels of vegetable fibres. Percentage analysis: Solids 21·3, water 78·7, inorganic ash 22·2 per cent. of dried weight of fæces. Total fat 44·4 per cent., neutral fat 26·24. Fatty acids and soaps 18·16 per cent. Conclusions.—The diastasic activity is only slightly above the normal and thus gives no indication of any marked pancreatic insufficiency. The high figure for inorganic ash points to intestinal disturbances, as do also the acid content, the high values for total fat, and the relative ratio of unsplit to split fat. The results coincide in almost every particular with those found in cases of "cœliac disease." The absence of urobilin is also a striking feature.

Colonel DONALD ARMOUR, R.A.M.C., showed a case of Cirsoid Aneurysm in a woman. It was situated in the palm of the hand and bulged through a hole in the palmar fascia. One of the fingers had become infected and gangrenous. He considered that extirpation of the aneurysm was impracticable, and proposed only to remove the damaged tissue.

# Reviews and Notices of Books.

*The Hearts of Man.* By R. M. WILSON, M.B., late Assistant to Sir James Mackenzie under the Medical Research Committee. London: Oxford University Press. 1918. Pp. 182. 6*s.* net.

THE author's object is, amongst other phenomena, to encourage investigation from a clinical point of view of the relationship of the pulse to respiration, the mechanism of breathing in effort and at rest, the meaning and effect upon the general circulation of the "great lakes" of the skin, abdomen, and lungs. The MS. was read by Sir James Mackenzie, and some of his astute criticisms as to the author's views on peristaltic waves in arteries which join the blood lakes and on a "systole of the thoracic veins," and also criticisms of Professor Bayliss, are given in the preface. The author gives an account of what he calls "reaction breathing," the muscular picture of what is commonly called "a start," and the return to the normal after starting. In the description are included such phenomena as retraction of the head in "starting" and its effects on the movements of the chest, the action of the sterno-mastoid, serratus magnus, diaphragm, and other muscles concerned in respiration, and the pivot formed by the scapula with the shoulder as an additional factor. The important part played by the abdominal wall muscles is discussed, their action suggesting to the author a syringe-like action. During this thrust of the abdominal muscles upon the thorax—whereby blood leaves the thorax by every available channel—it is suggested that the only two possible situations into which blood can be discharged from the pulmonary blood cisterns and other cisterns during the reaction state are the muscles and the cerebral cavity. The abdominal cisterns are considered and then the ductless glands, which are grouped according to the immediate or later exercise of force tending to compress them, considerable attention being given to the effects of adrenalin.

Many of the author's views and suggestions are ingenious and borne out by a close study of the details of anatomy; others will require more investigation. The author states that he will feel amply rewarded if his work helps to stimulate an interest in the great processes of physiology which, being exaggerated or deranged, we call "disease." His aim should be achieved.

1. *Studies in Electro-pathology.* By A. WHITE ROBERTSON, L.R.C.P. & S. Edin., Temp. Major, R.A.M.C. Pp. 304.
2. *Studies in Electro-physiology (Animal and Vegetable).* By ARTHUR E. BAINES, Consulting Electrician.

London: George Routledge and Sons, Ltd. 1918. Pp. 291. 12*s.* 6*d.* net each.

1. THE author offers "a fresh view of the nature and functions of Lipins or Lipoids," and attempts to explain these from the electro-chemical, as opposed to the purely chemical view. His claims are of a high order, for he considers that if his contention can be upheld that the body is primarily an electrical machine and that photo-electrical phenomena dominate and determine chemical activities, "there is no doubt that the book will revolutionise medical science." Moreover, "the claim that the most septic wounds can be successfully treated by di-electric substances alone, and without recourse to antiseptics, is a direct challenge to Listerism, and this challenge alone stamps the book as a remarkable one." It is in some senses a remarkable book.

We may pass over "The Law and the Man," "The Law of the Wild and the Parable of Creation," as well as "The Servants of the Law." There is a pleasantly written chapter on light, others on some factors and electrical phenomena in metabolism, and something about cells; one on di-electrics or insulating substances and tissues, electrical tensions with a view to set forth what the author calls the "law of fitness": "To each his place, and for all a place." Man alone, it appears, "transgressing the command that he shall keep his place in the ordered equilibrium of creation, has fallen out of line with eternal law, and the result has been disaster to himself." According to the author the electro-motive force of the body in health is of constant if low potential.

"All material entering a cell has a definite E.M.F. conserved by a lipoid insulating film from induction charges from the lymph which carries it, and that E.M.F. is specific to its relations with the cell wall and to the forces which within the cell will engage and deal with it."

Quick lunches we know about, but the author introduces the reader to "quick" foods—i.e., animal and vegetable cells taken into the stomach *alive*, and while yet electrically charged and before electrical death of the cell has induced chemical change.

"Not for nothing was flesh more than forty-eight hours old denied to the Jew. ..... All food for man should be so fresh that electrical change has not taken place ..... food which is electrically discharged, and so no longer 'quick,' is not in a fit state for reconstitution by electro-chemical forces into corresponding body structures."

Under the title "The Di-electric in Surgery" certain claims are made for the treatment of wounds with rock oil. This is the author's faith:—

"I am convinced that the scientific method of treating an injured cell, no matter where situated in the body, and no matter by what means injured, is to concentrate upon the restoration of the cell and to neglect the bacillus absolutely."

Thirty cases of war wounds treated with di-electrics only are recorded. Other matters dealt with are toxins and master-toxins, beri-beri, a study in di-electrics, myxœdema, what the author calls "white man's beri-beri," and other aberrations of metabolism. We have quoted briefly some of the author's views as himself the best expositor. Those who are interested will find how far an idea can dominate the conceptions and practice of the surgeon and physician.

2. Mr. Baines's book "claims not only to reveal a fundamental hitherto undiscovered truth, but also to point the way to a better understanding of the great principle underlying Life itself." It is difficult to discover in these studies the one law upon which all creation is founded—the law which governs, without exception, everything that lives upon the earth, animal and vegetable alike. Part I. deals with the electrical structure and function of plant life, in which, from the author's point of view, Nature, the great electrician, is laid under contribution from the apple to tubers and the acorn. Of the last we are told that "a beautiful simplicity characterises this seed, and one might well believe that from it was borrowed the principle of the modern incandescent electric lamp-holder," and that Nature, for a reason not yet understood, joined up acorns in series. In Part II. a most heterogeneous array of statements, quotations, opinions, and experiments are introduced, including many quotations and illustrations from well-known text-books on such subjects as nerve impulse, cell-reproduction, animal magnetism, amœboid and muscular movements, Nissl's granules, ganglion cells, nerves, and their terminations. To the author's mind there can be no doubt that plain muscle fibres "are transversely striated, although the striæ are too small to be clearly observed," for it would appear "that it is difficult to conceive how they can shorten and broaden if only longitudinally striated." In the appendix we read, "All vegetable toxins, so far as my experiments have gone, yield a negative galvanometric reaction. The negative system of a plant is in the root, stem, stalks, and veins of the leaves."

We fail to see how the author's studies do much to lead to a better understanding of the great principle underlying life itself.

*Fractures* (*Gunshot Fractures of the Extremities*). By JOSEPH A. BLAKE, Lieutenant-Colonel, M.C., U.S.A., Chief Surgeon American Military Hospital No. 2, A.E.F. With 40 illustrations. London and New York: D. Appleton and Co. 1919. Pp. 150. 7*s.* 6*d.* net.

THIS publication, which is described as a monograph on "Gunshot Fractures of the Extremities," was originally intended to form part of a book which was being prepared for the Council of National Defence. It contrives to set down in a concise manner the conclusions formed by the author as the result of an extensive experience in the treatment of war fractures. It is printed clearly, is easy to read, and contains a series of good skiagraphic reproductions. Diagrams are given of all the splints, extensions, and other "stunts" which were in common use at the latter end of the war. The volume is divided into two sections, the one dealing with fractures in general and the other with special fractures. The whole can be read and inwardly digested in a few hours, and yet covers the ground adequately. Due attention is paid to all the recent advances, both in the early and late treatment of fractures, and to the vital question of the transport of such cases from the field of action.

For the student the volume will serve as a text-book by means of which he can quickly familiarise himself with the new methods, while the descriptions of the various instruments will form a useful guide in practice.

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*Neurasthenia, Shell Shock, and a New Life.* By JOSEPH S. MILNE. Newcastle-on-Tyne: R. Robinson and Co., Ltd. 1918. Pp. 46. 2*s.* 9*d.*

THIS little book is full of excellent advice to his fellow sufferers, written by a neurasthenic patient who appears to have been but poorly treated and half-cured. The pity is that it has not been subject to medical revision, for the undoubted good it can do is marred by the author's ignorance of the relation between shell shock and neurasthenia and by his absurd notions of the physical basis of the subjective symptoms he describes. If only the author had been guided as to what he should insert and omit, the book might have been far more valuable, not only as an encouragement to others similarly affected, but also as an intelligent record by a neurasthenic of his own symptoms. In workmanship it bears all the signs of its neurasthenic authorship; the sentences and paragraphs are irritatingly short, there is needless repetition, and the introductory remarks, termed Part I., follow Part III. at the end of the book! Despite, or rather because of, these and other abnormalities, the book is of undoubted medical interest, as may be gathered from the following quotations: "When I was requested to do anything, my body seemed to be the acting member, while my head seemed to travel detached and above my body, as I walked to execute the message." "I could not use my powers of thought. If I tried to do so, it only aggravated the feeling of madness ....." "There is a feeling of being 'boxed in'; and consequently, the more agitation to get relief, the greater is the danger of going mad."

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*Traité de Physiologie.* Par J.-P. MORAT, Professor à l'Université de Lyon, et MAURICE DOYON, Professeur Adjoint à la Faculté de Médecine de Lyon. *Fonctions de Relation*, par J.-P. MORAT. *Fonctions de Reproduction*, par M. DOYON. 221 figures en noir et en couleurs. Paris: Masson et Cie. 1918. Pp. 872. 25 frs.

THIS, the fifth volume, completes the treatise on physiology begun several years before the war. About one-half is devoted to the sense organs with the addition of phonation and locomotion, and the remainder to reproduction. In discussing the functions of the skin and the exploded doctrine that "touch is the basis of all the senses" it is interesting to note that Magendie by experiments on mammals, and even on man (during a cataract operation), determined that puncture of the retina with a needle produced no tactile sensation. Rather less space is devoted to visceral and referred pain than the importance of the subject in practical medicine seems to warrant, and more, perhaps, might have been given to reciprocal innervations. Over 200 pages are given to vision—"touch perfectionated, touch at a distance." Very considerable attention is given to geometrical optics, far more than generally obtains in English text-books; indeed, most of the medical students in this country would be unable to profit by the exposition given by the author, as they do not possess the necessary preliminary mathematical knowledge. (The somewhat meagre equipment of most medical students in a knowledge of physics is a grave defect in our medical curriculum, and is a severe handicap in the pursuit of such a subject as physiology.) Hearing and phonation together occupy about 100 pages. Oddly enough, in dealing with locomotion chrono-photography is dealt with quite shortly, and there are no photographic illustrations to show the graphic results obtained by the kinematograph.

The rest of the book is given to "generation," and is really a monograph on this subject taken in its broad aspects, covering in fact the whole zoological scale—altogether a most useful and comprehensive survey in which zoologists themselves will find much to interest them. There are many references to the literature; those to French authors, being relatively numerous, will prove most useful both to the student and investigator.

We heartily congratulate the veteran professor of physiology in Lyon on the completion of a great task, carried out under conditions so disadvantageous and with such unswerving determination and marked success at a time when France was forced to draw the sword, every preoccupation being set aside for the defence of justice, right, and humanity.

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*Monographs on Experimental Biology: The Elementary Nervous System.* By A. H. PARKER, Sc.D., Professor of Zoology, Harvard University. With 53 illustrations. London and Philadelphia: J. B. Lippincott Company. Pp. 229. $2.50.

THE increasing specialisation in various departments of natural science which induced English authors to issue a series of monographs in biochemistry, physiology, and physics has led a number of American biologists to issue a series of monographs on experimental biology. This volume is one of the first two of the series, which attempts "to portray the elementary nervous system as it exists in the simpler animals and in the simpler parts of the more complex forms." The subject matter is drawn almost entirely from the three simpler phyla of the multicellular animals—sponges, cœlenterates, and ctenophores.

Starting from the conception of these physiological categories in their order of sequence, there are sense organs or receptors, central nervous organs or adjustors, and muscles or other effectors. Since the term nervous system does not ordinarily include the effectors, the whole chain of related parts—receptors, adjustors, and effectors—is designated as the neuro-muscular mechanism. Sponges represent that stage of evolution in which a primitive type of muscle tissue—contractile tissue—appears, unaccompanied with nervous elements; they possess effectors described as muscular sphincters, not innervated, but acting in consequence of direct stimulation. A chapter is given to independent effectors in higher animals, incorporating some of our knowledge on myogenic and neurogenic contractions of muscular fibres. The transmission of impulses in non-nervous tissue, as in sponges, is spoken of as "neuroid transmission." Particular attention is given to the muscles and nervous arrangements, nervous transmission in sea-anemones, jelly-fishes and their allies, including the hydroids. The differences between nerve nets and a synaptic nervous system are emphasised.

Finally, there is a chapter on the evolution of central nervous organs from the simplest examples of the elementary nervous system—from its first trace as seen in independent effectors—through receptor-effector systems in cœlenterates, where a receptor element in the form of a sensory surface is added, by modification of adjacent epithelial cells. Here we have the first traces of a nerve net with diffuse and uncentralised nervous activities and great differences of transmission, which contrast strongly with the definite paths in the higher animals possessing the well-differentiated central nervous organ or adjustor.

This monograph is an excellent example of the experimental method as applied to the elucidation of the functions of the nervous activities of the lower invertebrate organisms, and indicates, perhaps, the new trend of investigation in zoological studies, where physiology is gradually being added to the more purely morphological side. There is an excellent appendix on the literature of the subject, already a goodly array.

# THE LANCET.

*LONDON: SATURDAY, APRIL 26, 1919.*


## Post-graduate Medical Education.

IT has been a commonplace for many years in every introductory address given at medical schools that the medical man's education does not cease with the attainment of degrees, diplomas, and licences; and it has been the invariable habit of orators on reaching this stage of their remarks to point out that every clinical question which presents itself to any practitioner in any circumstances is something from which the practitioner learns, and therefore is a factor in the perfecting of his education. But it is only in comparatively recent times that it has become widely recognised that general practice is a "continuation school" of so fitful, sporadic, and disorderly a sort that its benefits are not properly retained by those who actually receive them, and can never be communicated comprehensively to medical practice in such a way as to conduce to elevation of the standards of efficiency or the practical progress of our science. Now, however, we all see that the medical education of the qualified man should be conducted with something the same care, system, and inclusive range that have characterised his training while *in statû pupillari*, and schemes of post-graduate medical education have arisen at various centres with the object of supplying to general practitioners an opportunity for keeping abreast with advances made in various branches of medical science, and for receiving special instruction and collating personal experiences.

We announced not long ago, in these columns, that a scheme of post-graduate medical education, advanced by the representatives of post-graduate schools and special hospitals in London, had reached the stage of a final draft. This draft has now been sent to the individual bodies concerned, and, having met with their approval, will be discussed at a meeting to be held at the Royal Society of Medicine on Tuesday next, April 29th, over which Sir WILLIAM OSLER will preside. We have already been in a position to indicate the lines of the London scheme,[1] and in its approved form it differs little from the draft submitted to the constituent bodies. The scheme begins with a general statement of objects, indicating that a post-graduate association is required to meet a large demand from medical graduates for systematic teaching. Among the classes of graduates mentioned are, first, general practitioners in Great Britain, who wish to spend their holidays in familiarising themselves with late developments in all branches of their work, or in concentrating upon some particular subject in which they desire to specialise, either completely or in conjunction with general practice. Secondly, medical officers in the Navy, Army, Air Force, Indian and Colonial Services earnestly desire a good post-graduate centre; they are already supposed to attend post-graduate courses at stated intervals, and for them the London scheme should provide many facilities which at present they lack. Graduates, thirdly, from our Dominions and India and Egypt, who have recently obtained their qualifications, frequently seek to continue their medical education in England as qualified men; they are prepared to devote a longer time to this purpose than can ever be afforded by the holidays which general practitioners obtain, and to them a post-graduate educational institution in London should prove a great benefit. And, lastly, there are the graduates of the Allied countries, especially the Americans, to whom a scheme for post-graduate medical education in London will certainly appeal, for they have in the past, in large numbers, studied in Germany and Austria because they were unable to obtain equal facilities in England. This especially applies to American practitioners, but we may be certain that both the French and Japanese will gladly support the institution in London of a real post-graduate centre. All the existing London medical schools will, it is hoped, take their share in the work, providing post-graduate courses of short duration at each institution, but so arranged that a system of teaching will be obtainable throughout the year. Such a general course, with its dates and the selection of subjects dealt with, will be in the hands of the deans of the medical schools for mutual arrangement; but, besides this, special courses are proposed where a graduate will have the opportunity of deeper study in particular subjects; and the graduates who attend such courses will have open to them opportunities for remaining with the teacher responsible for the course in order to act as his clinical assistant and to do research work under him. The existing London post-graduate schools and special hospitals at which post-graduate instruction in the past has been given will, assuredly, continue their labours in coöperation with the new Association, while facilities will be afforded to the post-graduate students to attend the hospital practice at the institutions where their teachers hold appointments. The central organisation of the new Association has been carefully thought out, and the constitution framed so as to enable the holding of property and the receiving of a State grant, while the home of the Association will be a building in central London containing the offices of a permanent secretarial staff, library, and recreation, luncheon, and tea rooms; in short, it is proposed to erect a suitable and well-equipped building to become the meeting-place of the medical graduates of the Empire and Allied nations.

Such are the hopes for post-graduate education in London for the not distant future, but at the present the Fellowship of Medicine is prepared to cater in a thoroughly efficient manner for the same class of graduates. The Fellowship has arranged with the majority of the hospitals and medical schools in London for emergency post-graduate courses, the time tables and syllabus of these courses are posted in the entrance hall of the

[1] THE LANCET, March 8th, 1919, p. 393.

building of the Royal Society of Medicine weekly, while important special courses in connexion with the Fellowship are already in progress at several of the metropolitan hospitals. The movement, however, is by no means confined to London, as our news from other medical centres shows. We publish in our columns this week, for example, notices from the University of Birmingham and the University of Bristol of post-graduate courses to be held during the forthcoming sessions, the studies being designed to assist the general practitioner exactly in the way we have indicated as necessary. At Bristol the practitioners who are able to give daily time to hospital practice will have special facilities provided for them, including minor appointments and the use of laboratory and library, while weekly clinical demonstrations will be given at the Royal Infirmary and the General Hospital by "teams" composed of physician, surgeon, pathologist, and specialist, on many topical or important subjects. At the University of Birmingham post-graduate courses of lectures and demonstrations will be held immediately on the prevention of venereal disease and on the treatment of the psycho-neuroses. Similar information reaches us now from many sides, and the arrival of a general feeling in favour of post-graduate medical education can be taken for granted. It must bear great fruit.

## Recent Advances in the Treatment of Pneumonia.

IN view of the enormous increase in the death-rate from pneumonia in the last few months the memorandum on this disease recently published by the Local Government Board,[1] dealing, as it does, with prophylaxis and general administrative measures, deserves to be widely circulated. In this connexion special interest attaches to the publication of Volume XXIX. of Studies from the Rockefeller Institute for Medical Research. During recent years there has been in progress in the Hospital of the Rockefeller Institute a study of acute lobar pneumonia, with the special object of improving methods of treatment. The paper contributed by AVERY, CHICKERING, COLE, and DUCHEZ, dealing more especially with the prevention and serum treatment of the disease, marks a distinct advance in our knowledge of this acute disorder. Attention has been confined to pneumonia of the lobar type, due to *Diplococcus pneumoniæ*, though certain of the results obtained are undoubtedly applicable to lobular infections of the lung and to other pneumococcus infections as well. The authors' researches lead them to the conclusion that as in the case of the meningococcus, various strains of the pneumococcus can be differentiated by the use of specific serums. Instead of regarding lobar pneumonia as one disease, they consider it a group of diseases. Although at present they fail to distinguish any constant clinical or pathological differences among the cases due to the different types of the pneumococcus, certain observations suggest that a clinical differentiation even of these cases may not be entirely impossible. Such a separation of the cases of pneumonia is analogous to what we have become accustomed to in the typhoid-paratyphoid group of infections.

Four types of the pneumococcus can be distinguished. Type I. is the most common cause of infection in man, giving rise to about one-third of the total cases in those localities in the United States in which studies of the types of pneumococcus have been made. Type IV. is less potent; organisms of this class are present normally in a large proportion of healthy throats, but may acquire pathogenicity under conditions as yet ill understood. Up to the present time antipneumococcic serum has been demonstrated to be effective only in cases due to Type I. pneumococcus. The serums of Type II. and Type III. are much less efficacious. The serums of the respective types also show a high degree of specificity, so that a Type I. serum is hardly more effective against infection due to Type II. pneumococci than antidiphtheritic serum would be. For this reason the authors do not advise the routine manufacture of polyvalent antipneumococcic serum. In practice it is recommended that immediately a patient comes under the care of a physician the type of pneumococcus responsible for the infection be determined, and if it prove to be of Type I. serum treatment should be undertaken at once. An exception is to be made in the case of very young children who, as a rule, appear but little intoxicated by the infection and in whom the prognosis is good and the difficulty of this line of treatment great. Every patient must also receive proper tests to determine whether he is highly sensitive to horse serum, and should this be the case measures for the desensitisation of the patient must be employed. This tedious process was only found necessary on two or three occasions in a series of over 150 cases. The serum is then introduced slowly into a vein, and the quantity which is given as an initial dose is about 100 c.cm. Once specific treatment is started it is to be continued until a definitely favourable result is obtained, and in order to accomplish this, the serum has to be given every 8 hours in doses of 90 or 100 c.cm., unless there are indications to the contrary. The average total amount of serum required has been about 250 c.cm. in the authors' experience. In the cases in which no reaction is obtained after several doses of serum, great care must be exercised to detect the presence of complications, such as empyema or otitis media, to which the persistence of temperature may be due, and on the existence of which the failure of the serum depends.

The authors conclude that after the injection of serum not only is there a definite improvement in the general condition of the patient, but that (1) pulmonary consolidation ceases to extend; (2) invasion of the blood by pneumococci is prevented, or if it has already occurred, the blood becomes sterile after one or two doses; and (3) the appear-

[1] Memorandum on Pneumonia. By Arthur Newsholme, Medical Officer, Local Government Board. Published by His Majesty's Stationery Office. 1919. Price 1d. net.

ance in the blood stream of immune bodies which normally appear only at or about the time of crisis. Major NICHOLS, of the United States Army, who treated cases occurring among troops on the Mexican border, reported a mortality of 8 per cent. in cases treated with serum, as opposed to a mortality of 39 per cent. not treated with serum. The findings of these American investigators are of the utmost importance, but confirmation is required before they can be generally applied in this country, for we have evidence that the types of pneumococci differ in different localities; in this connexion we have only to instance the experience in South Africa, where the strain responsible for a large proportion of cases of pneumonia in Transvaal natives appears not to be represented in America. To carry the work outlined above into effect will necessitate not only the storing and distribution of large supplies of serum of standard potency available at short notice, but special provision will have to be made in private and hospital laboratories, and in public health laboratories, for carrying out at all hours the technical procedures involved in determining the type of pneumococcus responsible in any individual case.

# Annotations.

"Ne quid nimis."

## THE MEDICAL PARLIAMENTARY COMMITTEE: THE ARRANGEMENT OF A CONFERENCE.

INVITATIONS were issued shortly before Easter by the Medical Parliamentary Committee to medical organisations and allied bodies taking an interest in medico-political activity to send representatives to a Conference for the purpose of discussing the best method for constituting the Medical Parliamentary Committee a permanent body on certain lines. The chief work of such a Committee, it has been suggested, would be:—

(1) To supply information of the trend of expert opinion on health questions to medical Members of Parliament.

(2) To furnish early information of impending legislation to the constituent bodies.

(3) To facilitate communication between the several bodies affected by any proposed legislation.

(4) To assist in increasing medical representation in Parliament.

The Conference will meet on Friday next, May 2nd, at 3 P.M., at the Central Hall, Westminster, under the chairmanship of Sir William Watson Cheyne, M.P., and we learn that the invitations of the Medical Parliamentary Committee have been widely and importantly accepted. We hope that any organisations—medical, pharmaceutical, or nursing—which have not yet replied to the invitation of the Medical Parliamentary Committee will do so at an early date. The Medical Parliamentary Committee (honorary secretaries, Dr. Arthur Latham and Dr. Charles Buttar) should be addressed at 20, Hanover-square, W.1. If the projected Conference proves a success, a practical federation of all bodies or associations, interested from intimate knowledge in health questions, should come into being at a time when a union of the sort may be profoundly valuable to the public.

## THE REACTIVATION OF ERYTHEMA NODOSUM BY TUBERCULIN.

To the French school we owe the doctrine, developed during the last 15 years, that erythema nodosum is a tuberculous manifestation. Previously the current view in this country was that the eruption was of rheumatic origin. Poncet first pointed out the connexion of erythema nodosum with tuberculosis. Then Dor observed a typical tuberculous follicle in an erythematous nodule. Finally, in 1913, Landouzy found a tubercle bacillus in an inflamed vessel in such a follicle. On the other hand, in 1909, Professor Chauffard and M. Troisier produced nodules typical of erythema nodosum by intradermic injection of tuberculin, while control injections with normal saline solutions, the typhoid toxin, and antidiphtheritic serum proved inactive. At a recent meeting of the Académie de Médecine of Paris, Professor Chauffard and M. L. Girard brought forward a new and striking proof of the tuberculous nature of erythema nodosum—the reactivation of the disease when nearly extinct by injection of tuberculin. Not only the nodules, but all the phenomena of the disease—the fever, arthralgia, and the evolutionary cycle—were reproduced. A married woman, aged 31 years, was admitted into hospital on August 20th, 1918, for articular pains. At the age of 2 years she suffered from fracture of the spine and right femur, which were followed by kyphosis and an abscess and sinus in the neighbourhood of the trochanter. At the age of 14 years she had an attack of pains in the knees which lasted a fortnight. When the pains subsided symmetrical erythematous nodules appeared on the legs. In 1914 and 1915 there was intermittent hæmoptysis. On admission she had suffered for three days from fever and pains in the joints of the legs and right shoulder. The temperature was 101·8° F. The painful joints showed no changes. The lungs were emphysematous and there were slight dullness at the right apex and sonorous and sibilant râles. Under salicylate treatment recovery took place in a few days, but a relapse began on August 20th. On the 28th the pains had disappeared and the general condition was good, but over the middle of the crest of each tibia two painful symmetrical patches of erythema nodosum appeared. On the following days the erythema faded. On August 31st the intradermic tuberculin reaction was tested. One drop of a 1 in 1000 solution (in mistake for a 1 in 10,000 solution) of the tuberculin of the Institut Pasteur was injected into the skin of the left arm. The reaction was positive; on the following day the temperature rose to 100·7°, and a painful erythematous nodule of the size of a cherry, and with all the characteristics of erythema nodosum, was felt at the site of injection. On the following days this nodule remained stationary, and the temperature ranged from 101·3° to 103·1°; the patient complained of pain in nearly all the large joints. On Sept. 2nd the erythema nodosum of the legs, which was painless and retrogressing, became painful and seemed to be rekindled. On Sept. 5th a crop of erythema nodosum, formed of patches of the size of a lentil, appeared around the initial elements over the crest of the tibia. Here the patches were somewhat confluent. There were others more apart on the legs, knees, and anterior surface of the thighs. Two appeared on the face—on the right eyebrow and on the chin. On the 6th and the 9th there were fresh bouts of arthralgia.

On the latter day the erythema was disappearing, but the nodule of the intradermic reaction persisted until the 29th. On Sept. 18th there was arthritis of the right knee, which disappeared on the 20th. Thus the attack of erythema nodosum provoked by the tuberculin was more acute and more severe than the primary one.

## THE RETURN OF RABIES.

THE return of rabies to this island, from which Mr. Walter Long's courageous persistence banished it for so long, is brought home to us by the occurrence of a case in and not far from London, and the enforcement, in consequence, of the muzzling order throughout a large part of the home counties. Success in sanitation, as we pointed out a fortnight ago, depends largely on attention to detail, and it must have been some miserable inattention in the enforcement of quarantine which has resulted in the intolerable inconvenience of a muzzling order and the restriction on movement of dogs in this country. A circular just issued by the Department of Health of the city of New York states the true and obvious fact that hydrophobia was entirely stamped out of the British Islands by having all dogs wear effective muzzles and instituting a rigid quarantine against dogs brought in from the outside. Such a quarantine, the pamphlet regretfully states, is impossible in New York city, where muzzling is therefore always necessary. Now that someone's thoughtlessness has broken our first line of defence, it remains for every good citizen rigidly to put in practice without murmuring the second and only other line of defence. Exceptional here, it is a measure in constant force in the metropolis of the United States, where Section 17 of the Sanitary Code runs: "No unmuzzled dog shall be permitted at any time to be on any public highway or in any public park or place in the city of New York." Strap muzzles do not pass this Code, and the New York Courts have ruled that any dog that can bite is not muzzled. Unfortunately, a number of persons, including several children, were bitten by the Ealing dog, since proved to have been rabid, and we remind our readers of the statement made in our issue of Jan. 11th, that antirabic treatment can now be carried out in this country. So far no human cases of hydrophobia have been reported. A new arrangement has been made by the Local Government Board which will enable antirabic treatment to be given in London as well as in Plymouth. The treatment will be given at the Pathological Department of St. Thomas's Hospital by Dr. L. S. Dudgeon, who has been supplied with antirabic material prepared at the Pasteur Institute in Paris and sent over at frequent intervals. This consists of dried cords of different ages preserved in glycerine and kept in the cold from which the necessary emulsions are made as required. The normal course of treatment involves daily attendance for a fortnight. There is, of course, no necessity for the persons undergoing treatment to stay in the hospital.

In order, on the one hand, that antirabic treatment should be offered to and urged on those who have been exposed to risk, and, on the other hand, to avoid applications for treatment for which there is no occasion, a regular system of interchange of information has been established between the medical officers of the Local Government Board, the department concerned with the provision of antirabic treatment, and the Board of Agriculture which is responsible for dealing with all questions relating to rabies in the dog. Persons bitten by suspected dogs should inform the police, through whom the necessary inquiries will be made in regard to the animal. The medical officer of health of the district will be informed in due course through the Local Government Board if the veterinary officers advise that the dog is proved to be rabid, or if the symptoms in the dog are sufficiently suspicious to justify antirabic treatment before the confirmatory diagnosis is available. It is part of the system that the inspectors of the Board of Agriculture and the police authorities at once bring to the notice of the medical officer of health any suspicious case of dog-bite reported to them. The medical officer of health, who then communicates with the Local Government Board on the case, is asked to obtain and supply the following particulars:—

(*a*) Name, age, and address of the person bitten.
(*b*) Date when bitten.
(*c*) Severity of the bite and part of the body bitten.
(*d*) Name and address of owner of the dog, or other information which will enable the dog to be identified.
(*e*) Whether rabies in the dog has been diagnosed locally.

When this information and the veterinary evidence show that the dog was rabid and that there has been a definite wound or abrasion of the skin which may have been infected, the case will be one for antirabic treatment. The medical officer of health will be informed of the facts, and all arrangements for the attendance of cases at St. Thomas's Hospital, London, must be made through him. As previously announced, local authorities are empowered to pay expenses in necessary cases.

## THE CARE OF THE ADVANCED CONSUMPTIVE.

"Wenn wir also vorläufig nicht imstande sind, die Gefahr, welche die engen, überfüllten Wohnungen mit sich bringen, zu beseitigen, so bleibt nichts anderes übrig, als die Kranken daraus zu entfernen und sie in ihrem eigenen Interesse und in demjenigen ihrer Umgebung besser unterzubringen, und das kann nur in geeigneten Krankenanstalten geschehen."

THE tuberculosis problem will never be solved until the case of the advanced consumptive is adequately provided for. A valuable symposium on the care of the advanced consumptive, which appears in the April number of the *British Journal of Tuberculosis*, opens with this statement, and we set it in relation to a sentence of Robert Koch's address delivered at the London Tuberculosis Congress of 1900. Nineteen years ago Koch clearly saw, and stated no less clearly, that the most important measure in the campaign against tuberculosis is the isolation away from home of the infectious person whose circumstances are not such as to make home isolation effective. "It is very encouraging to notice," Koch then said, "how in almost all countries there is a movement to improve the housing accommodation for the less well-to-do. I am convinced," he added, "that through these efforts, which should receive every possible encouragement, a considerable diminution of tuberculosis will be attained," and he went on to state (we give his actual words above) that so long as we are not in a position to avoid the danger enjoined by narrow, overcrowded houses, there is no alternative but to remove from them persons suffering from tuberculosis and to shelter these persons better elsewhere, both in their own interest and in that of their family

circle. He generously cited England as the only country blessed with a supply of special hospitals for tuberculosis, and he commended the increase of such accommodation to the generosity of the State, the municipality, and the private benefactor. We have not advanced far since 1900. Little, if any, provision for the advanced consumptive has been made outside the Poor-law. Dr. H. G. Sutherland states in the symposium to which allusion has been made that there are not more than 600 beds for advanced cases available in England and Wales. Much as they may regret it, none of the other contributors is in doubt of the necessity for removing some at least of the subjects of advanced phthisis from their home surroundings. Most are in favour of making compulsion available while cherishing the hope that in practice the need for it may seldom occur when accommodation is available in the neighbourhood and of a kind to which the consumptive is willing to go. Dr. F. W. Burton-Fanning is practically alone in doubting the effect of such segregation of patients with advanced phthisis in lessening the number of their belongings infected by the disease, and he asks what proportion of advanced consumptives are willing to enter and remain in an institution. Dr. A. D. Edwards answers this question for Bournemouth, where 65 per cent. are, as a matter of experience, willing to accept institutional treatment when offered. Some little consensus of opinion among the contributors is in favour of a municipal chest hospital as the centre where, as Dr. James Watt puts it, hope and comparative happiness are preserved. On this plan all cases, curable or advanced, are first received in the institution, which is used as a clearing house in much the same way as the tuberculosis dispensary at present. In London we possess such clearing houses already in the Brompton, City-road, and other special hospitals. Speaking from much personal experience Dr. Hyslop Thomson regards the hospital as occupying a position of primary importance, not only in relation to prophylaxis, but in preparing cases of active disease for the more strenuous sanatorium routine. Dr. A. Hamilton Wood and others prefer to use the existing general hospitals for the purpose. So much for the institutional treatment. Those who remain at home must remain under adequate safeguards. Mr. F. E. Fremantle describes them as cases pre-eminently for health visiting, and there can be no doubt that the work of the tuberculosis nurse or health visitor is capable of indefinite extension. Dr. C. Riviere puts, after the supply of sufficient isolation beds, the main essentials as an adequate supply of tuberculosis nurses and the provision where necessary of temporary homes for the younger members of the family, as he would allow no child under 5 to live in the near neighbourhood of the advanced consumptive. There is, in fact, an almost complete unanimity amongst the opinions expressed by many experts, which is the more remarkable as we may assume these opinions to have been given quite independently. Conviction has fluctuated during the last 20 years in regard to the rôle played by infection in the transmission of tuberculosis. Dr. Burton-Fanning still finds a link wanting in the chain of evidence as to the common mode of conveyance of the disease. Dr. Niven Robertson suggests that the advanced case is often equivalent to a mere cold abscess of the lung and not infectious in the same sense as an early acute case with expectoration. But the case for the effective isolation of the advanced consumptive may be taken as proved up to the hilt and one of the first tasks of the tuberculosis department of the Ministry of Health should be to provide institutional treatment for such cases of tuberculosis as cannot safely be treated in their home surroundings.

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## PREVENTIVE VACCINES FOR INFLUENZA.

AT the Naval Station in San Francisco prophylactic inoculation against influenza was undertaken by A. J. Minaker and R. S. Irvine in a detailed and orderly manner, their results being fully reported in the *Journal of the American Medical Association* for March 22nd. Sufficient growth of the influenza bacillus was obtained on super-heated blood agar (a similar procedure was described in our issue of Jan. 25th last, by Mr. Alexander Fleming). The pneumococci and streptococci were grown, emulsified, and counted separately, although we are not told how the authors were informed what strength of each constituent was the correct one. This is a point which applies to all mixtures of vaccines; it is always a matter of opinion what is the correct proportion of the several ingredients. The toxicity of each suspension was tested upon laboratory animals, and also upon volunteers. The vaccine was composed of *B. influenzæ* (Rockefeller strain), 5 "billions"; pneumococcus Types 1 and 2 (various strains), each 3 "billions"; pneumococcus Type 4, 1 "billion"; *Streptococcus hæmolyticus* 100 million, per c.cm. The dosage in c.cm. was 0·5, 0·8, and 1·0 at 3-day intervals. Of the civil population 1080 were inoculated. Their morbidity was 1·4 per cent. and mortality nil. These persons mixed with an uninoculated population, whose corresponding figures were 5·3 per cent. and 9·2 per cent. Also, 1950 marines were inoculated, whereas 8232 were not. The respective morbidity and mortality ratios were 1·8 : 2·8 per cent. as compared with 15·7 : 5·0 per cent. For uninoculated nurses and attendants in the San Francisco hospitals the ratios were 33·8 : 2·1 per cent. as against 3·5 : 11·0 per cent. (one death only), so that it would appear that amongst uninoculated nurses the incidence equals one-third of their whole number in this instance.

These results suggest that preventive vaccines in influenza should have a great future, but this opinion appears not to be shared by our workers in India. It will be recalled that in his report on influenza in India Major Norman White remarked that outbreaks of this disease are as brief as they are severe, and that even if innumerable doctors were ready to begin inoculation work at the first warning the epidemic would have run its course before a tithe of the population could be inoculated. Similar opinions are expressed in a number of the provincial reports on the outbreak. The health officer to the Calcutta Corporation, for instance, states that, judging from his experience of plague inoculation, he does not think that inoculation against influenza on a large scale is practicable in Calcutta. The Sanitary Commissioner in Bihar and Orissa takes practically an identical line and points out that inoculation for plague has not been very successful in that province. The Sanitary Commissioner, Central Provinces, writes: "In an epidemic of this sort, where the incubation is so short and the spread of the infection so rapid, wholesale inoculation can hardly be considered to come within the sphere of practical politics." He goes on to state that were a vaccine and multiple syringes available some good could be effected in

towns if all non-official medical practitioners were organised. The evidence from the Punjab is to the same effect. The Sanitary Commissioner observes that in the first place there is no certainty yet as to the cause of the disease, and, secondly, reinfections were the rule in the last epidemic. He, indeed, met with many cases where people had had three separate attacks in less than as many months. No vaccine could give greater protection than an attack of the disease, and assuming a vaccine as valuable as plague vaccine were evolved it would be of little value except in the case of the well-educated classes, who in any case suffer slightly. The Inspector-General of Civil Hospitals in the same province, again, affirms that a conservative estimate of the number of persons attacked in the Punjab was 80 per cent. of the population, and "it would be impossible to inoculate even a fraction of the millions who suffered." Finally, the Sanitary Commissioner, United Provinces, points out that if all the medical staff available in the United Provinces were employed on inoculation work, and each man did 100 inoculations per day, it would be possible in a six-week epidemic to inoculate 2¼ millions of the people. He further contends that if unlimited vaccine and unlimited medical personnel were available it is not in the slightest degree probable that the people could be persuaded to accept inoculation as a preventive measure for influenza.

The view in India is that as a curative measure and as a prophylactic in institutions under Government control inoculation may be of great value; but that as a measure of general prophylaxis for the population it can never be of any practical use during an epidemic. Our South African correspondent describes this week a more optimistic view on the part of the authorities in South Africa, but the population of India and South Africa are hardly comparable.

## AN ASPECT OF PSYCHO-ANALYSIS.

FEW subjects on which doctors differ have given rise to such vigorous polemics as the validity of the principles underlying the methods of psycho-analysis, and the earnest student, anxious only to get at the truth of the matter, may be forgiven if he turns to any source of information which is open to him. Disregarding the incommensurability of East and West, which poets have insisted on, he may wish to seek inspiration in the teachings of Indian philosophy, and if this is his aim he can obtain some assistance from the current number of *The Quest*, in which Mr. F. I. Winter discusses the relationship of psycho-analysis and the yoga aphorisms attributed to the semi-legendary sage Patanjali, who is said to have flourished about the beginning of the Christian era. By the term "yoga" is denoted that ultimate absorption of the human soul into the world-soul which is one of the basic principles of Hinduism, and the "yogi" who hopes to achieve it has by means of its rules to acquire perfect knowledge and employ this knowledge so as to destroy all consciousness and individuality. Of the various means to this end one of the most potent is the repetition of the sacred word *Om*, which from the psycho-analytic standpoint is a symbol of the suppression of the passions and the elimination of intellectual processes. With it Mr. Winter contrasts the inverse form, "moi," which may be regarded as a symbol of individuation arrived at, or so he seems to imply, as a result of the metathesis which occurs in dream-words. The Eastern agrees with the Western mind in providing as a repository for doubtful mental phenomena a sphere of the unconscious. To obtain a basis of comparison between these types of minds it is necessary to have a clear conception of the "libido" which plays so prominent a part in the teachings of both the Freud and the Jung schools, and this is by no means easy, for the idea, under the influence of the criticism to which it has been subjected, has assumed such protean aspects as a crude or sublimated sexual impulse, "psychic energy" and the "will to power." No doubt the thirst for happiness which seems to be what is meant by the Hindu term *rajas* can appropriately be included and thus the necessary link between the two mental attitudes can be provided. This being supplied, it appears that the main difference between them lies in the disposition of the libido, for the yoga ideal is regarded by psycho-analysts as a regressive introversion of libido which connotes mental disorder. The ultimate cause of the difference is to be sought in contrasted views of evolution, a process which Westerners regard as steadily progressive while according to Indian metaphysics it passes through cycles which, though immensely long, yet run a definite course and are then renewed.

A Hunterian lecture on the Surgical Aspects of the Collection and Transport of the Wounded will be delivered in the theatre of the Royal College of Surgeons of England on May 6th, at 5 P.M., by Professor T. B. Layton, illustrated by the Palestine campaign, from the fall of Beersheba to the Es Salt raid, with photographs taken by the lecturer and others. The lecturer will treat of the rôles of the administrator and surgeon relative to one another; the causes of failure to reach the ideal and the means of attaining thereto; varieties of transport and their relation to ground; and the handling of special cases.

## THE LATE DR. WILLIAM ALLEN STURGE.

SUPPLEMENTING the brief obituary notice which appeared in THE LANCET of April 12th, Dr. R. Hingston Fox writes:

The late Dr. W. A. Sturge was an enthusiastic worker in whatever he took up, whether in medicine, in the cause of women's medical practice, or in his favourite study of prehistoric flints. He published little, but he was a keen neurologist, and a paper on Progressive Muscular Atrophy, which won the silver medal of the Medical Society of London, is regarded as of permanent value. At Nice his medical practice was extensive, whilst his salons, full of archaic and beautiful Greek vases, were the resort of the curious. His first wife, Dr. Emily Bovell, practised as a physician. On his retirement from practice, at a later date, with his second wife, *née* Julia Sherriff, Dr. Sturge chose Icklingham, Suffolk, a very ancient centre of prehistoric life, as his residence; the name is perhaps connected with the Iceni, over whom Boadicea ruled. It is one of the most remarkable flint fields in Britain. The writer has strolled with Sturge over the fields around his home, picking up worked flints at every few paces. He built rooms for his large collection, and studied the minutiæ of the science. Present authorities may not all agree with the deductions he drew from the "glacier-scratches" and other marks upon the flint implements, but no one had a keener insight than he into the far ages of the flint-men or a more vivid imagination of their ways. His health failed many years before his death, and he had to bear the burden of recurring tachycardia, but his own careful management of the disorder enabled him to live on to a good age, and to accomplish work; although one cannot but feel that a large body of prehistoric lore dies with him. He was a man of much charm of manner, a good conversationalist, and exceptionally well informed.

# BRITISH MEDICAL ASSOCIATION:

## SPECIAL CLINICAL MEETING.

### SECTION OF MEDICINE.

#### WAR NEUROSES.

AT a meeting held on Wednesday, April 9th, with Sir DAVID FERRIER in the chair,

Dr. F. W. MOTT (Brevet Lieutenant-Colonel, R.A.M.C., T.) opened a discussion on War Neuroses. He said that in no previous war had such a vast number of men been disabled by functional nervous diseases. In 1917 it was calculated that one-third of the unwounded, or one-seventh of the total discharges, including the wounded, were found permanently unfit on account of functional nervous or mental diseases. This high percentage might be explained by two exceptional conditions: (1) unprecedented exposure to the physical effects of high explosives and poison gas and to all the modern developments of scientific barbarism, combined with long periods of trench warfare in which the men were unrelieved for weeks in 1915 and 1916; (2) the conscripted army had included all sorts and conditions of men, a high proportion of whom were of a neurotic or neuropathic predisposition.

The War Office recognised three forms of war neurosis—"shell shock," hysteria, and neurasthenia. The term "shell shock" was an unfortunate one and had led to a considerable amount of misconception; it was extremely difficult to differentiate *commotional* shock from *emotional* shock, for both might be attended by a state of unconsciousness followed by hysterical or neurasthenic symptoms. Still, there was no doubt that "commotio cerebri" did occur without any signs of injury on the body. The proof was that the cerebro-spinal fluid withdrawn by lumbar puncture came out under pressure, and contained blood and albumin. Rupture of the tympanum and voltaic vertigo were not infrequent. Moreover, the examination of the brains of two cases recorded by him showed microscopic hæmorrhages and ruptures of small vessels in the cerebro-spinal structures. The importance of these hæmorrhages was rather as expressing a severe commotional disturbance than from the damage caused by the extravasated blood. Experiments on animals by Mairet and Durant and by Crile confirmed the clinico-anatomical observations.

*Inborn or Acquired Emotivity as a Factor in Psychoneuroses.*

A soldier who had an inborn or acquired emotivity would sooner or later suffer from a psychoneurosis. Quite early in his experience at the Neurological Section of the 4th London General Hospital Dr. Mott had found that the war neuroses and shell-shock cases had, in the majority of cases, an inborn or acquired disposition to emotivity. The same conclusion was arrived at by French and German authorities. There was no new nervous disease in "war neuroses"; it was the same hysteria and neurasthenia which neurologists knew before the war and which were curable by the same methods. Both hysteria and neurasthenia were common in conscripts, or an hysterical crisis, contracture or paralysis, had occurred when it became known that the conscript would be in a draft for general service. He described the striking cure of a paralysed pensioner, whose condition had persisted for more than three years and who, when a conscript, had lost the use of his legs almost immediately after inoculation. Officers much more frequently suffered from anxiety neuroses than hysteria. Dr. Mott then gave illustrative cases of severe shock inducing hysterical manifestations in neuropotentially sound individuals, including one of an officer with acro-contracture of the hand which had persisted for more than three years.

*Effects of Fear.*

He pointed out that the instincts connected with the emotions of fear and anger were very important, but that the herd instinct was equally so, for *morale* in a regiment was largely dependent upon the instinctive suggestibility of man. He quoted the descriptions of anger and fear from Darwin in the "Expression of the Emotions." In modern trench warfare anger was impotent, the soldier could neither fight nor take refuge in flight; he could only adopt the crouching attitude of immobility and concealment, the instinctive reaction of a timid animal when threatened with danger. Adopting Darwin's description of paralytic fear reaction to the case of a man in the trenches who could not adapt himself to the situation, he would suffer from continuous emotional bodily and organic changes. These bodily organic and biochemical changes produced by repercussion profound effects on the mind and its affective tone. Whether we accepted the James-Lange theory of the emotions, that the organic bodily changes of the emotion of fear reverberated in the mind and served to arouse the feelings, or the theory of the perceptual feeling of fear preceding the organic changes, at least we must admit the existence of a vicious circle. Terrifying dreams of battle experience were usually met with, but were not always recollected. All the while the dream persisted the patient showed many of the subjective symptoms and objective signs of neurasthenia. Did the dreams cause the bodily symptoms or the reverse? In support of an organic disturbance reviving a terrifying experience was the familiar fact that an indigestible supper would cause a nightmare. The neurasthenic, who so frequently suffered in the early morning with symptoms of nervous exhaustion and irritability, owed this condition to the exhausting effect of dreams which he might or might not recollect. Such an effect wore off as the day advanced.

*Development of Hysterical Paralysis and Contractures.*

There might be three stages in the development of hysterical paralysis and contractures: (1) Not infrequently an injury might induce an instinctive reflex defence reaction: immobilisation of the limb; (2) the mind reacted and the idea developed that the disability would relieve the individual from a situation which he feared: return to the front; (3) finally, late phenomena of prolonged immobility occurred: disuse, wasting of muscles, fixation of joints associated with vaso-motor, thermal, and secretory disturbances. Dr. Mott considered that Babinski's theory of reflex contracture arising in consequence of a wound or traumatism would not hold, as all the changes which he attributed to reflex influence on the spinal cord, or to the sympathetic, could be produced by prolonged immobilisation. The difficulty of curing a contracture with a wound he attributed to the continuous effect which a wound offered to the mind of the patient that the disability was due to it, especially when this had been steadily reinforced by doctors and pension boards, who had regarded the wound as the cause. Hundreds of functional cases with and without wounds had been cured at the Maudsley Hospital in a few minutes to a few hours; a few hours to a few days; or a few days to a few weeks; although some of the cases of paralysis or contractures had persisted for many months or several years.

*The Psychology of Fear in Relation to Neurasthenia.*

When comparing the prolonged trench warfare of 1915-16 with the war of movement of recent date in relation to the production of war neuroses, the various defensive reactions for racial and self preservation must be considered. Ten per cent. of the soldiers admitted under his care suffering with shell-shock neurasthenia, especially when trench warfare was taking place in 1915 and 1916, suffered with signs of hyperthyroidism. In many of these cases the blood pressure was higher than normal, especially in cases of anxiety neurosis with terrifying dreams. Probably this was due to increased adrenalin in the blood, which was all the more probable from the fact that Cannon and Elliot had shown that the blood of frightened animals contained an excess of adrenalin. It might be regarded as a biochemical defensive mechanism, for it raised the blood pressure and caused an increased quantity of glycogen to be converted into sugar, thus enabling the animal to prepare for flight or fight. Having regard to Crile's work, might not the hyperthyroidism be also a biochemical defensive reaction? In support of this Dr. Mott referred to his work on the chromatolytic changes in the nerve cells in a number of cases of myxœdema. These changes were indicative of exhaustion of the kinetoplasm, and must be considered in conjunction with the disappearance of the symptoms by thyroid medication.

*Influence of the Body on the Mind.*

Dr. Mott gave some striking examples of the influence of the body on the mind.

*Suggestion*, or the affective relation of the doctor to the patient, was considered usually only in regard to its curative influence. But, according to his experience,

injudicious suggestion unfortunately was not uncommon and had the reverse effect. He cited as an example the neurasthenic who, when suffering from cardiac symptoms, was diagnosed as suffering from D.A.H. The patient's mind thereby dwelt upon his heart and its disordered action; it becomes an anxiety to him. While this was so the heart's action would remain disordered. It would be better if this term were abolished and simple neurasthenia adopted in its place. Every organ and structure in the body was represented in the field of consciousness, but the stimuli arising from them only aroused consciousness of their existence when they were above or below normal intensity or when their rhythmical, phasic, or periodic character varied from the normal. The consciousness of the existence of an organ or structure interfered with its normal automatic or habitual action. He laid particular emphasis on the necessity *in all cases* of making a thorough clinical examination, for two reasons: it made the physician confident that he was dealing with functional and not organic disease, or an organic disease with a halo of functional disturbance; it also inspired confidence in the patient, for he would reason that the doctor had made a thorough examination, and "if he assures me there is no organic disease, I must listen to his persuasion."

*Treatment of Functional Paralyses and Contractures.*

In a recent instructive article Bernard Hart had pointed out that there were three methods of psychotherapy: (1) Affective therapeutics, a term which he preferred to "suggestion"; (2) persuasion, or the rational explanation of the symptoms to the patient; (3) analysis. The first two methods sought to eliminate the morbid condition; the third did more than that, it sought to uproot the initial cause which led to the morbid condition.

Each case must be dealt with on its merits. Many physicians did not care to use faradism to reinforce persuasion, but he had employed this method of physio-psychotherapy or other physical means of reinforcing suggestion and re-education with great success. It had several advantages: (1) The patient could be shown that all his muscles contracted when they were stimulated; (2) where there was functional loss of sensibility the application of faradism by the roller or brush would rapidly restore sensibility, and it might be employed successfully to remove functional tremors. It aroused the dormant consciousness in the brain of the affected part and directed voluntary attention, which was in abeyance, towards the affected part. He had found it especially useful in mutism and aphonia. If it had been tried before and failed some other expedient must be adopted, for the patient would have lost faith in the method.

Another method which he had found very useful for restoring function by persuasion was to tell the patient to shut his eyes and repeat with the sound hand and arm all the passive movements which were being made with the paralysed limb. If he were able to do this he could be told that there could not be any break in the nervous paths to his brain from his hand, and that he only had to will the movement or assist in the passive movements to recover the power in them.

In some cases of functional paralysis, however, there was a complete loss of the kinæsthetic sense; these were much more difficult to cure by suggestion. The great secret of curing these hysterical cases was time and patience; they should not be left until there was either a material improvement or a complete cure. Otherwise the patient would lose faith, for we must always have present in our minds the dictum of Charcot: "C'est la foi qui sauve ou qui guérit."

*Discussion.*

Dr. A. F. HURST, Lieutenant-Colonel, R.A.M.C., divided emotional neuroses into three kinds: hormonic, psychasthenic, and the emotional class of hysteria. The last variety could be cured at a single sitting. There was, in his opinion, no constant underlying condition in hysteria. Of a series of 100 cases of hysterical contractures and paralyses of limbs over 90 were cured at one sitting, and the others in periods up to 14 days. The organic lesion of a case in which both organic disease and hysteria were present might improve so that all the symptoms which remained were hysterical, but the signs were those of the organic disease.[1] He also spoke of hysterical deafness and fits. The deafness of soldiers even when the drum was ruptured was almost always hysterical, and the fits were due to the same condition and very seldom true epilepsy. The treatment was by explanation, persuasion, and re-education.

Dr. E. F. BUZZARD, Lieutenant-Colonel, R.A.M.C., agreed that the ætiology and symptomatology of war and peace neuroses were the same—instability, fatigue, and anxiety, assisted by other influences, such as injuries, poisons, and emotional disturbances. The important question for the future was, Would the treatment of these cases learnt in the war be carried out? It was a duty for the new Ministry of Health to see that proper treatment was provided, both prophylactic and remedial.

Sir J. PURVES STEWART said that a clear definition was essential for diagnosis and for treatment. The term "shell shock" should be dropped out of medical nomenclature. "Neurasthenia" also was very loosely employed for a medley of different states. He divided the neuroses into concussion neurosis, fright neurosis, hysteria or suggestion neurosis, reflex paralysis, exhaustion neurosis or neurasthenia, psychasthenia, catatonic stupor or trance, and combinations of each of these with others and with organic disease.

Dr. L. R. YEALLAND spoke of the good results of the treatment of such cases at the National Hospital for the Paralysed and Epileptic before the war and the subsequent freedom from anxiety. In 90 per cent. recovery had been permanent. He was in close touch with about 100 cases, and read some letters from certain of them. He criticised treatment by hypnosis.

Dr. G. F. JOHNSTON said that he had treated some 5000 cases in a neurosis hospital in a forward area after the battle of Passchendael, which meant about 1 per cent. of those engaged. The men were segregated into groups, according to whether they suffered from simple exhaustion, neurasthenia, hysteria, organic lesions, or confusional states. The last was more common than was generally supposed. As a subgroup were 50 cases of hyperthyroidism in which after a few weeks the exophthalmos disappeared and the patients became indistinguishable from neurasthenics. As the result of suitable treatment only 20 per cent. of the 5000 had to be returned to the base. The earlier the patient was seen the better. For cases with general tremor the treatment had been separation in a cubicle, farinaceous diet, valerian, and instruction to the patient to relax his muscles. This often led to an end of the disorder. For cases in general the treatment was persuasion and suggestion, occasionally reinforced by weak faradism. He disapproved of painful electrical stimulation.

Dr. DUNDAS GRANT dealt with cases of deafness, mutism, aphonia, and stammering met with in soldiers.

*Neurological Work in the U.S.A. Army.*

Colonel ZABRISKI, U.S.A., spoke of the methods of eliminating neuropathic subjects in the formation of the U.S.A. Army and the organisation for dealing with neurological cases in the war. At first there was one special base hospital, afterwards there were also three neurological hospitals established farther forward, where patients were treated for two to three weeks and then returned to the front or evacuated to the base. The figures were indefinite in comparison with others, for the conditions were different on the arrival of the U.S.A. Army, when the fighting assumed an open character and at an early period there had been insurmountable difficulties in transport and proper segregation. Of every 100 cases of war neurosis which entered the field hospitals 65 were treated there and 35 passed through the evacuation hospitals and were directed to the neurological hospitals. Twenty returned to the front line within two weeks, 15 were evacuated to the special base hospital, and of these 3 returned to the front line for duty, 11 did duty in a rear area, and 1 only was sent to the port of embarkation for U.S.A.

Major HAMILTON, U.S.A., gave further details of the organisation of the neurological work of the U.S.A. Army.

Colonel MARSHALL MACDONALD, N.Z.M.C., spoke of the distinctions between contracture which was voluntary and that which was involuntary. The first was under the control of the central nervous system, the latter under the sympathetic nervous system. Four conditions were necessary in the production of confirmed neuroses: a predisposing hyper-

[1] THE LANCET, 1919, i., 369.

tonicity of the sympathetic nervous system, a predisposing mental state, a determining factor, fixing and prolonging factors.

Dr. A. W. ORMOND, Major, R.A.M.C., spoke of cases of psychical blindness, and pointed out that they often originated in slight changes of an organic kind.

*Results of Treatment.*

Dr. T. LUMSDEN agreed that cases grouped under the title "shell shock" did not form a homogeneous group, but fell into the well-known peace-time categories of hysteria, neurasthenia, malingering, and mixtures thereof. The malingerer was cured by detection and firm handling; the neurasthenic by rest, good feeding, and, later on, bodily exercise under conditions which excluded worry, responsibility, and mental strain. The hysterical cases must be dealt with in two stages. First, the symptoms must be removed by suggestion of some kind. Hypnosis was generally not required, persuasion and explanation usually sufficing. Anyone with sufficient self-confidence could remove the paralysis, spasm, loss of voice, tremor, &c., but the patient was not cured thereby, and much harm had been done by over-confident and self-satisfied physicians who had marked such cases down as "cured" without investigating their after-history. Secondly, the improvement must be confirmed. This was best met by the Country Host Institution, where men were sent to stay for three months with gardeners, farmers, &c., and worked with these in a private capacity with little control and without worry or responsibility. The necessity for such a course was demonstrated by the frequency of relapse even after treatment at the special neurological centres. The authorities at such centres should visit the Special Medical Board, the employment bureaus, and the War Pensions Committees, and would there find a number of their patients relapsed and uncured. The Special Medical Board dealt last year with some 30,000 cases, and at a single employment bureau 930 men, discharged for war neurosis, applied for assistance during the last six months. The most difficult cases to deal with with regard to employment were the pseudo-epileptic and borderland mental cases. The pension authorities usually offered to send the cases with "fits" to an epileptic colony, and if they refused or discharged themselves were prone to cut down their pensions and leave them to fend for themselves. He hoped the numbers of relapses which he had quoted would prevent in even the most successful wonder-workers any tendency to gratulation or even to complacency.

Dr. GORDON HOLMES said that true commotion or concussion cases had special symptoms not seen in emotional cases. The patients were dazed, suffered from mental and physical inertia and lethargy, and complained of headache and pain in the back of the neck. There were frequently pupillary changes, and there was an emotional side. The neuroses of the war were identical with those before it; yet the results obtained by treatment were not satisfactory. There were about 36,000 neurasthenics awaiting re-education. This he ascribed to the fact that the men had been treated by medical officers who were not nerve specialists and who were unacquainted with the measures so successfully employed before the war. He had been much impressed by the failures of the psycho-analysts and hypnotists, and gave some instances of these.

Surgeon-Captain BENTON spoke of the psychoneuroses as they occurred in the Royal Navy and of the measures taken for their disposal and treatment.

Captain M. CULPIN spoke of the frequency and importance of the "phobias" in these cases. Anyone could remove the symptoms, but this did not constitute a cure. Repression of sensations and fears was common, and until these were removed the patients did not get well.

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## INFLUENZA.

At a meeting held on Thursday, April 10th, with Colonel HAVEN EMERSON, M.C. U.S.A., in the chair,

Major-General Sir WILMOT HERRINGHAM opened a discussion on the Clinical Aspects of Influenza. The spring epidemic, he said, began by small local outbreaks in the northern part of the front during April, and about the middle of May the number of cases increased rapidly. The numbers affected were very great, in the First Army the total admissions to casualty clearing stations between May 18th and July 2nd being 36,473. At the same time it was very prevalent in the Belgian Army. It was extremely infectious, large numbers being affected at or about the same time. The incubation period was from two to four days. The speaker then quoted the account of the spread of the disease in a hospital ward by Major Michael Foster and Major H. A. Cookson, which was published in THE LANCET, 1918, ii., p. 588. The epidemic was at first mild in type. The onset was usually sudden. The initial symptoms, lasting 2–3 days, were headache, pains in the limbs and back, and a feeling of weakness. The pains were of a severe aching character; pain in the head was referred to the frontal sinuses, and that in the eyes to the back of the globe. The temperature usually reached its highest point—102° to 103° F.—on the first day, and generally fell by lysis. The pulse was rapid during the first two days, but seldom reached 120. On June 23rd prophylactic measures were advised by the Influenza Committee. Other less important symptoms noted included rashes of various characters, conjunctivitis and coryza, nystagmus, enlargement of the spleen (not common), slightly furred tongue with clear marginal zone, anorexia, loss of taste and smell, vomiting, and—less frequently—diarrhœa.

In the early stages of the epidemic progress was rapid and convalescence uneventful; later the complications increased in number and severity, chiefly affecting the lungs, and consisting of bronchitis, broncho-pneumonia, and lobar pneumonia. The cases of bronchitis and broncho-pneumonia were severe and prolonged, with a high and very irregular temperature, a rapid pulse, dyspnœa, and cyanosis. The sputum was sometimes frothy and muco-purulent. The cases of true lobar pneumonia showed a more regular fever, but frequently terminated by lysis. Pleurisy and pleural effusion occasionally occurred. There were a few cases of pericarditis and suppurative otitis; albuminuria and nephritis were fairly common. Meningitis involving brain and spinal cord was rare.

The autumn epidemic began in September and differed from the spring epidemic principally in the greatly increased proportion of pulmonary cases and the occurrence of the very serious cyanotic condition in which, in many cases, the patients became heliotrope in colour or purple, without the expected respiratory distress or failure of circulation, and which a physical examination of the lungs could not account for. The most common complication was nephritis.

The third wave began in February and commenced to decline about the middle of March. The cases had been less numerous and severe, and had been marked by a lessened incidence of secondary nephritis and the fairly common occurrence of jaundice. Hæmorrhages were frequent.

*Treatment.*

Prophylactic inoculation was considered too dangerous, on account of the negative phase, to employ widespread, and its results had been proved inconclusive. Treatment by vaccine when the disease was established was considered of doubtful benefit and of certain risk. It was difficult to judge the effect of any remedy, as the cases varied so much, and the virulence differed from month to month. Brandy, adrenalin, quinine, sodium salicylate, subcutaneous injections of corrosive sublimate, the serum of convalescents, and oxygen had all been tried. Comparing this series of epidemics with that of 1889 the speaker wondered if the present disease was influenza at all, or, if so, whether it had not considerably changed its character since then

Captain M. GREENWOOD, R.A.M.C. (T.F.), spoke on the

*Epidemiology.*

He said that the first issue to be raised was whether the form of the influenza wave of last summer differed materially from that of the primary manifestation during the winter influenza of 1889–90. He had examined the records of a mixed population, covering both sexes and all ages, and of a military population comprising only adult males, in each period. For the primary influenza of 30 years ago he chose the Munich notifications and the records of the British Army (men and non-commissioned officers on the Home Establishment). For the summer of 1918 he chose the Copenhagen notifications and the data of the Royal Air Force (experience in the home camps and aerodromes). After considering these records he thought that we must conclude

that there was no clear-cut formal difference between the outbreak of 1889–90 and that of 1918, nor between its evolution in a mixed population and in one homogeneous with respect to age and sex. Whilst the actual forms of the waves were plausibly explained either by intra-epidemic changes of infectivity due to the parasite, or by varying susceptibility, the fact of our having such waves at all in this year and not having them in previous years was attributable to the existence of a double periodicity to be referred to the coexistence of two distinct strains of infecting organisms, or two armies of infecting organisms, which might or might not possess a bacteriological specificity. Dr. W. H. Hamer had sought to explain the periodicity of measles by the continuous accession to the population of susceptible units, and Dr. R. J. Ewart, of Barking, suggested that the infectivity of the organism had been exalted by the opportunities for direct transference between persons of like age and sex which the aggregation together of young adults, owing to war conditions, had afforded. Neither hypothesis would solve the difficulties. It was clear that a first attack conferred substantial protection, but the duration of immunity might not be long. Much further investigation along the general lines illustrated by the work of various epidemiologists was needed to give us a clear view of the problem.

The contribution of Major F. B. BOWMAN, C.A.M.C., was read *in absentiâ* by Colonel J. G. ADAMI.

*Ætiology.*

The investigations which Major Bowman described in his paper were conducted at the instance of the Adviser in Pathology, B.E.F., with the assistance of the Medical Research Committee. The bacteriological work, as well as the experiments in connexion with the filter-passing virus, were undertaken by the late Major H. G. Gibson and himself, and the histological work by Captain J. I. Connor, A.A.M.C. He described the bacteriological investigations which were carried out, the methods employed, and the material examined.

Pfeiffer's bacillus was usually present in the respiratory tract. It was found in 67 per cent. of sputa examined, and in 80 per cent. of necropsy material. A diplo-streptococcus showing marked pleomorphism, and belonging to the *viridans* group, was isolated from 80 per cent. of necropsies. Morphologically at times it might have been called a pneumococcus. Only five strains of hæmolytic streptococci had been isolated from 25 necropsies. A symbiotic relationship between Pfeiffer's bacillus and *S. viridans* seemed probable. Agglutination reactions as regards Pfeiffer's bacillus showed that the most marked reactions occurred between the second and sixth day of the disease. Agglutination might be more marked in the higher than in the lower dilution.

*A Filtrable Virus in Influenza.*

Since the preliminary report of investigations confirming the work of Nicolle and Lebailly[1] the work had been carried on. Baboons, monkeys, rabbits, guinea-pigs, and mice had been used, but owing to the nature and severity of the epidemic the infection of men had not been attempted either with cultures or filtered material from cases of influenza. A general description of the clinical and pathological results obtained in animals was then given, the picture being the same whether unfiltered or filtered influenzal sputum was used as the infecting agent. As a rule, the observers were struck by the paucity of the symptoms in the animals in cases which presented gross pathological lesions of the lungs at necropsy.

The conclusions arrived at were as follows: 1. The pathological lesions in experimental influenza in animals closely resembled those found in man. 2. Inoculation of filtered and unfiltered sputum from cases of influenza apparently produced the disease in animals. 3. There was some evidence in favour of the view that passage of the virus from one animal to another raised the virulence. 4. A minute globoid organism (0·1 to 0·2 $\mu$) had been grown from tissues from infected animals, from filtrates of lung tissues, and filtered sputum from cases of influenza. 5. Cultures had been carried to the fourth generation. 6. Suspensions of these small globoid organisms inoculated into animals had produced hæmorrhagic conditions in the lungs. 7. The organism was (*a*) capable of passing through a filter; (*b*) in all probability the cause of influenza as seen to-day. 8. Similar organisms had been found also in pericardial exudate and in lung juice from cases of influenza (necropsy).

[1] Brit. Med. Jour., Dec. 14th, 1918.

*Discussion: Influenza in the Navy.*

Surgeon-Captain P. W. BASSETT-SMITH, R.N., spoke on the epidemic as it had affected the Navy. The disease had been very protean in its character and had in many instances been difficult to diagnose. Generally speaking, it showed an increase in virulence and severity of complications as the year progressed. The disease was intensely infective, and in some cases as many as two-thirds of a ship's company were attacked, and this was noticed as much in a cold as in a hot climate; in the North Sea as at Sierra Leone. When men were congregated closely together in depôts, especially where overcrowding was marked, the incidence was very high.

Reports of the disease in an epidemic form had been received from all parts of the British Isles. It had been prevalent throughout the Mediterranean and in the Adriatic. In the East Indies and in the Persian Gulf many ships had been affected. At the Cape of Good Hope ships were only kept free by cutting them off completely from the shore. At Sierra Leone some ships suffered severely, the disease spreading to the shore. In North America the disease was introduced into a ship of war from the shore, and during the passage to England there were 150 cases.

*Seasonal incidence.*—There had been two main epidemics, one in the spring and early summer, and one in the late autumn, as was generally recognised on shore. The increased coldness of the weather in the autumn often caused decreased ventilation, and this in the presence of a virulent strain of organism caused the autumn epidemic to be much more severe than the spring one. The percentage mortality was much greater in the autumn than in the spring epidemic. At one depôt in the first epidemic there were 928 cases and no deaths, whereas in the winter with 468 cases there were 14 deaths, or 3·01 per cent.

*Bacteriology.*—In the reports detailing the results of blood cultures, the finding, when positive, had always been a *Gram-positive* streptococcus or streptodiplococcus (7 out of 12 cases at one laboratory). In no cases has a Gram-negative organism like Pfeiffer's bacillus been isolated from the peripheral blood. Sputum examinations gave variously *B. influenzæ*, pneumococcus, and streptococcus with occasionally other organisms, as *M. tetragenus*, *M. catarrhalis*, &c. Pleural fluids frequently yielded *Streptococcus pyogenes* of a hæmolytic type.

*Post mortem.*—*B. influenzæ*, pneumococcus, and streptococcus were generally found. From the purulent pleuritic fluid the streptococcus was by far the most commonly found organism.

The incubation period had been put down as varying from a few hours to four days, most commonly 48 hours. A ship free from disease arrived at an infected port, and in 24 hours the first cases were noted, 662 out of 718 being attacked. In his opinion the length of infectivity was such that at least seven days' quarantine was required after the occurrence of the last case. Undoubtedly the disease ought to be a notifiable one. As regarded immunity, it had been stated that in some ships which had experienced both epidemics no case affected in the spring epidemic had been attacked in the autumn. Immunity was by no means absolute, since hospital nurses and others had in his own experience definitely contracted second attacks.

Among preventive measures the most important was prevention of overcrowding, both by day and night. Other measures included efficient ventilation, avoidance of exhaustion, and the supplying of good food. In the presence of a severe epidemic the prophylactic vaccine had not reduced the incidence of the disease in the greater number of instances of which records had been received. On the other hand, the severity of complications and death-rate were less among the inoculated than in those not inoculated.

*Incidence, Causation, and Treatment.*

Major NORMAN WHITE, I.M.S., spoke of the severity of the Indian epidemic both as regarded incidence and the death-rate, which in Bikanir had reached its maximum of 89·5 per 1000.

Lieutenant-Colonel E. D. W. GRIEG, I.M.S., had investigated many cases post mortem for the causative organism. Only two bacteria were found in the respiratory sinuses—viz., Pfeiffer's

bacillus and the pneumococcus. The former had also been found in the bronchial glands.

Major MICHAEL FOSTER quoted the statistics for inoculation against influenza as obtained at the Boulogne base for comparatively stationary units—the Army Pay Corps, Q.M.A.A.C., and the personnel of certain general and stationary hospitals. Each patient received a preliminary dose of 0·5 c.cm. of War Office vaccine and a second dose of 1 c.cm. ten days later. The results were as follows: inoculated 624, number affected 32 (5·1 per cent.), deaths 2 (mortality percentage, 6·3); uninoculated 1544, number affected 108 (7·0 per cent.), deaths 6 (mortality percentage, 5·6). The evidence in favour of inoculation thus appeared slender. As a complication jaundice was noted in about an equal proportion of cases in both the October and February waves of the epidemic. The cases were for the most part mild. In two fatal cases the bile duct was found patent, and bile could be squeezed into the duodenum. In the February epidemic eight cases of unilateral parotitis occurred as a complication; three of these suppurated and one died.

Major W. H. TYTLER, C.A.M.C., had recovered Pfeiffer's bacillus in 93 per cent. of all cases. The majority of deaths were, he thought, brought about by secondary infection.

Major PATTERSON urged the importance of Pfeiffer's bacillus as a cause of secondary infection.

Mr. E. B. TURNER contrasted the recent epidemic with those of 30 years ago. In 1889, though we had some supervention of bronchitis and pneumonia, the main complications were dependent on infection of the nerve centres. The other clinical symptoms also differed materially both with regard to temperature, pulse, time, and condition of skin. He had, at that time, come to the conclusion that salicin in large doses might possibly have a good effect upon cases of influenza. He had experimented successfully upon himself, and in every epidemic which had arisen since then he had treated all his cases with large doses of salicin and had not had a single complication of bronchitis or pneumonia, nor any death. In the epidemics from 1890 up to the present time nearly 3000 cases had been successfully treated in this way. The doses must be both large and very frequent. He had seen no toxic effects. Three cases had had a red rash, a certain number had sudamina, and between 30 and 40 a certain amount of buzzing in the head. In his experience salicin was also valuable in reducing infectivity.

Lieutenant-Colonel A. GORDON GULLAN spoke of the epidemic in Gibraltar and of the relation of influenza to trench fever.

Colonel HORNER-SWIFT, U.S.A., thought the most important prophylactic measure was the early segregation of infective cases. This also was important from the patient's point of view, as no treatment was more important than early hospitalisation.

Other speakers were Colonel A. B. SOLTAU, Dr. W. J. TYSON, and Lieutenant-Colonel G. B. FOSTER, U.S.A.

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## VENEREAL DISEASE.

AT the meeting of this section held on Friday, April 11th, with Sir WILLIAM OSLER in the chair,

Brevet-Colonel L. W. HARRISON opened a discussion on Venereal Disease. Having paid a tribute to the work of the medical officers with whom he had been associated in the management of venereal disease, during the war and since, he said that the principles underlying the attack on this important problem had been the same with all armies—the securing of continence by propaganda and prompt disinfection in the event of exposure. The United States Army authorities had employed a measure of compulsion, and their figures showed definitely that the disinfection of a man who had exposed himself to venereal infection was practically certain to prevent the disease, provided that it was carried out by a skilled person and took place within an hour of exposure. Of 2426 successive men disinfected within an hour and a quarter of exposure only two contracted the disease. In our own armies disinfection had been on a voluntary basis, a system depending for its universal application on the energy with which it is pushed, and for its effect on the wisdom with which its protagonists direct their efforts.

The methods pursued in the Imperial Army at home had been as follows In 1916 ablution chambers were set up in barracks where men could disinfect by irrigating with potassium permanganate and by inunction with calomel ointment. They were not a great success because medical officers took little interest in them. Under a system introduced in the middle of 1918 any man could have on application a small bottle of potassium permanganate solution with which to swab the parts and a tube of 30 per cent. calomel ointment, some of which was to be squeezed into the urethra and some to inunct the parts after exposure. A specimen lecture was provided as a guide to medical officers, and inspectors were appointed to see that all directions in connexion with the early treatment were being carried out properly. The results had not been very striking when the ratio of venereal disease for the whole country is considered. This could not be ascribed to failure of the actual disinfectants to protect, since it is the experience of most venereal hospitals that a very small proportion of the patients admitted had taken any precautions within an hour of exposure and over 80 per cent. had taken none at all. In a barracks in London, where the medical officers had taken a keen interest in the question, the irrigation ablution apparatus had been dismantled early in 1918 as an experiment and reliance placed on calomel tubes. The change did not appear to have made any great difference to the rate of hospital admissions. The ratio of admissions per 1000 per annum had diminished from 95·6 for 1913 to 32 for October to December, 1918, and afforded good evidence that early treatment on a voluntary basis can effect a substantial reduction by careful and wisely worded personal instruction.

Although prompt disinfection was almost a certain preventive, this obtained only under the precise conditions which the U.S.A. authorities had been able to command. Their results should not be allowed to raise exaggerated hopes as to the effects when the disinfection is left to the patient. They did not justify us in expecting such a wholesale reduction as would obviate certain strong objections to the dispensing of remedies by unqualified persons. The names by which they were called conveyed the idea that they were antagonistic to the germs of the disease and suggested that they were curative, so that patients would use them for self-treatment of developed disease. As the result of improvement of social conditions there had been a steady fall in the number of cases of venereal disease in the Army from 1885 to 1913, during a period when no special disinfection prevailed and lectures on incontinence were practically non-existent.

### *Treatment of Gonorrhœa.*

The abortive treatment depended for its success on the patient reporting within 24 hours, but by far the greater proportion of cases hitherto had been seen much too late for abortive treatment to be feasible. The best results had been obtained by the following method: (1) after the patient has urinated disinfect the glans and meatus with 1/2000 perchloride or with spirit; (2) irrigate the whole urethra with 1/4000 potassium permanganate; (3) inject 10 per cent. argyrol or 5 per cent. protosil, and make the patient retain it for 20 minutes; (4) repeat this twice daily for three or four days; and then (5) irrigate once daily with permanganate for 4–6 more days. Many new methods of treatment for the later stages had been investigated. Most cases had been treated by irrigation with potassium permanganate, accompanied later by prostatic massage and bougies. We could not yet afford to dispense with local treatment. He had tried many remedies, both orally and by injection, but so far, apart from vaccines, had not seen any notable success in bringing about the destruction of the gonococcus. On a standard of cure which requires equally from the test and control cases the disappearance of gonococci, intramuscular injections of succinimide and other compounds of mercury and treatment by collosol manganese had failed to shorten the average duration of gonorrhœa. There was good hope that in detoxicated vaccines we might have achieved a real advance. A comparison between four parallel series of cases gave the following results in order of merit: First, detoxicated vaccine with a total duration of 35 days in hospital, or 10 days less than any of the other series; next, ordinary vaccine in moderately large doses; then the small dose vaccine series; last, the routine treatment. Tests of the patient's blood serum by the complement-fixation method showed that the antibody response corresponded closely with the clinical progress. It might prove

a valuable method of determining the progress of patients suffering from gonorrhœal infection.

Amongst the most potent causes of *epididymitis* after admission to hospital had been irrigation at too high pressure, too early interference either by prostatic massage or instrumentation, and too violent or too much physical exercise, either in the form of fatigues or duties. The irrigator vessel should not be higher than four feet above the genitals unless other devices failed to induce the fluid to enter the bladder. At Rochester Row it was the invariable practice to irrigate the bladder as soon as the sphincter could be persuaded to relax. Massage and instrumentation were not employed in the absence of complications until the urethritis had settled down to the stage where discharge is very slight and the urine has lost its turbidity from pus.

In *arthritis* excellent results had followed intravenous injection of antityphoid vaccine. The dosage had been 120–180 millions at first, increased to 150–220 millions after about five days. There had been good results from intramine, but less pronounced than after T.A.B. injections. A notable feature had been the apparent frequency of *keratodermia blennorrhagica*, but he doubted whether it was more than 1 in 6000 cases. A striking improvement had followed the use of arsenobenzol ("914") in one case.

*Treatment of Syphilis.*

After recounting the gradual development of the treatment and the modifications which circumstances had made necessary, he gave the details of that now employed, expressed in the following table:—

*Routine Course for Ordinary Fresh Cases of Syphilis (to be Interrupted in the Event of Dermatitis, Jaundice, or other Signs of Intolerance Supervening).*

Each patient to be carefully scrutinised for signs of stomatitis or general malaise, his weight to be taken, and urine tested for albumin before each injection.

| Day of treatment. | Arsenical preparation. | | | Mercury. |
|---|---|---|---|---|
| | Intravenously. | | Intravenously, intramuscularly, or into deep subcutaneous tissue. | Intramuscularly. |
| | "606" | or "914" | or "914" | and mercurial cream. |
| 1st ... ... | 0·3 g. | 0·45 g. | 0·45 g. | gr. i. |
| 8th ... ... | 0·3 ,, | 0·45 ,, | 0·45 ,, | gr. i. |
| 15th ... ... | 0·3 ,, | 0·45 ,, | 0·6 ,, | gr. i. |
| 22nd ... ... | — | — | — | gr. i. |
| 29th ... ... | 0·4 ,, | 0·6 ,, | 0·6 ,, | gr. i. |
| 36th ... ... | 0·4 ,, | 0·6 ,, | 0·6 ,, | gr. i. |
| 43rd ... ... | — | — | — | — |
| 50th ... ... | 0·4 ,, | 0·6 ,, | 0·6 ,, | gr. i. |
| 57th ... ... | 0·5 ,, | 0·75 ,, | 0·6 ,, | gr. i. |
| 59th: Blood test. If positive or doubtful, continue as below. | | | | |
| 61st to 75th day: Potassium iodide. | | | | |
| 82nd ... ... | 0·3 g. | 0·45 g. | 0·6 g. | — |
| 92nd ... ... | 0·4 ,, | 0·6 ,, | 0·6 ,, | — |

If blood is negative on the fifty-ninth day suspend treatment, and if practicable repeat blood tests at intervals of three months, but do not hold back from draft overseas.

In tertiary cases, provided that all symptoms have then disappeared, return to duty on fifty-eighth day regardless of Wassermann.

The above lines of treatment do not apply to that of syphilis of the central nervous system, cases of which should be treated on individual lines. The principle in such cases is to commence cautiously, increasing the individual dose gradually to 0·3 g. "606" or equivalent in "914," and prolonging the course until the patient has received 4 to 5 g. A very successful method is to give a weekly intravenous injection of "606" and a weekly intramuscular of "914"—0·3 g. in each case.

At Rochester Row, as at No. 39 General and No. 1 Stationary Hospitals, a very large number of patients had been treated by intramuscular or deep subcutaneous injections of "914." This is attended in some cases by pain, and the chance of its occurring may preclude the method from private practice, but it gives better results than the intravenous method. At Rochester Row the results had been most encouraging in tabes and other syphilitic affections of the central nervous system of giving alternate intravenous and intramuscular injections in doses not higher than 0·3 g., two injections being given each week. It was not possible to give a true estimate of the therapeutic results. At various hospitals 35,083 treatment cards were examined. Of these 387, or 1·1 per cent., proved to have been clinical relapses after the administration of 2·4 g. "606" or more; 219, or 0·6 per cent., were relapses after less than this amount of arsenobenzol, and 546 were relapses after mercurial treatment alone. Of the "606" relapses 21 showed symptoms of disease of the central nervous system, and of the 546 relapses after mercury alone 39 were of the same category. Of 18,500 cases treated at No. 39 General Hospital the total relapses were 730, or 3·9 per cent., of which 471 had previously been treated elsewhere. An analysis of the treatment which the 471 had received showed that there was a considerable reduction in the number of relapses in patients who had received more than five injections of arsenobenzol. Of 5000 cases treated at No. 1 Stationary Hospital 965 were relapses, and of these 282 had previously received no treatment, 398 only mercurial treatment, and 285 arsenobenzol treatment of some kind. Whenever there seemed a chance of the advice being taken, patients had been recommended to continue treatment by mercurial pills for 6, 12, or 18 months, according to the case.

A scrutiny of 39,377 treatment cards of patients treated in Imperial and Australian venereal hospitals showed that 370, or 0·9 per cent., had suffered from dermatitis of various degrees, and 18, or 0·045 per cent., of these had died. There were 221 cases of jaundice in the series. Thirty deaths from this complication were all that he had been able to trace in this country. There had been seven deaths from convulsions or coma. Six fatalities occurring in Ireland were shown to be due to malaria. The introduction of intramine in the manner suggested by McDonagh was tested but made no difference either to the incidence of toxic effects or to the serological results. There appeared to be no difference between the toxicity of the German compound and that of the French or British.

The conclusions arrived at by the experience of the war were: 1. If the treatment of a man suffering from the ordinary type of syphilis but otherwise healthy be started with 0·3g. "606" there is little fear of convulsions or coma. 2. A course of treatment in which 2·6 g. "606" is spread over 57 days is likely to be attended by very little trouble in the shape of dermatitis or jaundice, but the percentages of these cases is likely to advance uncomfortably as this amount is compressed into shorter and shorter periods. 3. Besides this spreading out of the course there is no better preventive of severe dermatitis than careful observation of the patient and cessation of the injections on the first sign of erythema. 4. Although the therapeutic results of what may be called "the war or emergency" courses of treatment appear to be fairly satisfactory, it is more desirable to spread out the treatment of most cases, particularly secondary cases, over a longer period, and eventually to administer more arsenobenzol and mercury than has been practicable during the war.

*Discussion.*

Colonel E. M. ASHBURN, U.S.A., said that statistics showed that less than 1 per cent. of the population between the ages of 21 and 31, of the U.S.A., were affected. In France the rate of incidence was below one-half of that ever obtained before. He spoke of the organisation in force in the Army, which included opposition to prostitution, incentives to continence, such as educational measures, games, exercises, and amusements, prophylactic measures, early treatment, and punishment. The total use of tubes had been small. The prophylaxis employed was washing with soap and water, perchloride of mercury, protargol or argyrol, calomel ointment, followed by abstention from micturition for four hours and wrapping of the parts in toilet paper. Practically no one acquired the disease if these measures were taken within one hour of possible infection. The campaign had been very successful, a success ascribed in order of importance to: (1) moral and social measures, such as recreation; (2) opposition to prostitution; (3) prompt prophylaxis; (4) punishment and threats of punishment.

Mr. J. E. R. MCDONAGH considered soap-and-water and micturition as useful as permanganate and calomel. The serological test was a sign of immunisation which further treatment might destroy. By using intramine he had had no single instance of arsenical poisoning and only one neural recurrence. He considered intramine invaluable in preventing arsenical poisoning.

Lieutenant-Colonel BOLAN said that undue prominence had been given to the complications following the use of arsenobenzol compounds. Of 6890 cases the number of cases of jaundice was 115. Of these only 11 were severe. There were six deaths; the cause of these was acute yellow atrophy, which must be considered apart from simple jaundice and was not, in his opinion, merely due to the drug, but an additional factor, probably organismal, played a part. The percentage of jaundice was no greater than in syphilis without arsenical treatment. The incidence of dermatitis was slight. He had found no advantage from intramine, which he thought acted in virtue of the sulphur it contained; ichthyol internally was preferable.

Major PEYTON, after using "914" intramuscularly, which caused much pain and induration locally, had then employed "914" intravenously.

Lieutenant-Colonel SCOTT JACKSON asked why precautions had not been taken in our Army as they had been in the American. The disease should be dealt with as "trench foot" had been, by free publication and by sending round the proportional frequency to the commanding officers concerned and leaving them to do the rest. The prophylactic measures were valuable and the reasons urged against them not worth consideration. Fear was no deterrent, nor did a prophylactic outfit afford a sense of safety to the men, but rather acted as a reminder of the danger.

Surgeon-Captain ROBLEY BROWNE said that arsenical treatment was not permitted in the ships, and cases had to be transferred to the hospitals. There had been no standardisation in treatment, although this would be advantageous. Galyl had been used extensively in the Navy.

Major MCGREGOR spoke of the value of collosol manganese and intramine.

Lieutenant MACLEOD spoke favourably of early treatment, and as a former inspector of prophylactic centres narrated the unsatisfactory way in which it had been carried out.

Colonel MCWHAE, A.A.M.C., spoke of the methods employed in the Australian Army. There had been 2000 cases in 100,000 men. A microscopical examination was made in every case, and after early treatment the men had been instructed to report for re-examination on the third, sixth, and ninth days.

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## PROGNOSIS IN CARDIO-VASCULAR AFFECTIONS.

Sir JAMES MACKENZIE, in opening a discussion on Prognosis in Cardio-vascular Affections, said that few people realised the importance of prognosis, but it had been brought home to the profession by the disastrous results which had followed the improper classification of recruits.

Dr. THOMAS LEWIS said that the chief object of the present meeting was to discuss problems which had assumed prominence during active warfare and to consider whether information acquired and methods evolved during the past four years might be used or applied beneficially during peace. The war had especially emphasised defects in the prognosis of cardio-vascular affections as generally applied before the war, and illuminated the widespread misjudgment of capacity for severe or prolonged physical work. Up to the end of January of this year over 50,000 men had been discharged from the Army and Navy for affections attributed to the heart; many more still remained in the Army. Of these discharged men he calculated that from one-third to one-half were suffering when they joined the Army from the affections for which they were discharged. The fault lay, not with the members of the boards, but with the system of their work.

Men invalided to a military heart hospital for genuine breathlessness, exhaustion, pain, and giddiness on slight exertion, fell into two classes—those in whom signs of structural heart disease were to be found, and those in whom no such signs could be detected. The last had always greatly outnumbered the first, the proportion between them being approximately 1 to 10. It was the type without structural disease which the system of examination failed to detect, and it classed as examples of so-called "organic" heart disease a very large number of men in whom no real or disabling mischief existed. The detection of a cardiac murmur caused the rejection of a large number of recruits presenting it. An overwhelming majority of systolic bruits heard over the heart were known beyond possible question to be unassociated with structural change in this organ. There were two courses open. First, a large number of all those who presented these murmurs might be regarded as the subjects of heart disease; this was the course usually adopted. Secondly, the murmurs might be used to direct close attention to the heart for definite signs of disease, such as those of aortic regurgitation, mitral stenosis, enlargement, and *intolerance of exercise*, the systolic murmur being discarded subsequently in arriving at the actual prognosis. Of the two courses, the last was infinitely preferable to the first. Many alterations in the heart sounds—mufflings, accentuations, and reduplications—had been overassessed, as had several signs wrongly supposed to indicate enlargement of the heart, such as a diffuse cardiac impulse. It was only very occasionally that special methods of examination could profitably be employed in such a problem as the fitness or unfitness of the recruit. The great defect in the system of examining recruits had been reliance upon methods, suitable enough in forming or completing the diagnosis of grave cardiac disease, but unsuited in detecting the earliest manifestations of ill-health. The secret of successful prognosis lay in actual tests of efficiency.

The recruit's reaction to physical strain, his ability to perform tasks in some measure comparable to those which he would meet in the service in after days, was the most satisfactory single method which could be employed. The cardio-vascular system submitted to strain was the most sensitive gauge of a man's capacity for work. This method was equally applicable in sorting convalescent soldiers to categories of duty, and in assessing and re-assessing soldiers, especially those of the cardio-vascular class, for pension purposes. The measure of efficiency was the amount of work undertaken to provoke objective symptoms. The exercise test revealed faults (primary or secondary) in the mechanism of the circulation and of respiration; it brought to light deficiencies of the body which could not be gauged by any other known means; it revealed precisely those faults to know which was the essence of sound assessment. These tests should not replace the physical examination; they should supplement, or be supplemented by, the latter. The method had special value in cases where the signs of disease were obscure or doubtful, and it helped us to gauge the relative disabilities and relative prognoses in patients presenting similar signs of structural disease, for the reserve power in the heart muscle of the one might be much greater than that in the other.

In assessing cases of structural heart mischief for pension purposes an estimate of exercise tolerance, with or without set tests, should be regarded as a first principle. The capacity of many such men for work was considerable; it could be judged accurately only by considering the response to effort. When a pension board assessed a man's disability it also assessed his capacity and suitability for his intended work in civil life. In discharging convalescent patients from our hospitals it was our duty to advocate and adopt means by which they remained under close observation until they were fully restored to strength or until no further improvement was to be expected; it was our duty to observe the actual capacity for work of the patient before he left our charge, and to see that that capacity bore a reasonable relation to the work which he was going to undertake. About 90 per cent. of the discharged men of the cardio-vascular class had left the Army fully but wrongly persuaded that they were the subjects of heart disease. Many now refused, and would still refuse, to work because they believed that they ran serious risks when exerting themselves. It should be brought home to these men that their incapacity for work was but a limited incapacity, and in doing this exercises under medical supervision would greatly assist.

### *Discussion.*

Lieutenant-Colonel WARDROP GRIFFITHS agreed entirely with what Dr. Lewis had said. In the Northern Command cases with definite organic disease had been separated from those with defective action merely. The latter were put through a systematic course of exercises. Difficult cases were those with or without a history of rheumatism, but with a systolic murmur, and in whom the size of the heart was doubtful. In such cases it was useful to consider the man's build in attempting to arrive at a decision. A double diastolic sound at the apex was useful evidence of early mitral stenosis. He thought that it denoted a thickening of the mitral valve.

Captain LEVINE, U.S.A., said that the problem was somewhat different in the American Army. There had not been the same rush, but more doctors and more time, and owing to the numbers to be drawn from, selection could be more particular. The war had not been so long for them and fully developed cases of defect had not occurred to the same extent. Special precautions had been taken to prevent prospective D.A.H. cases from joining as the result of experience gleaned in this country. He pointed out that there were no figures available as to the number of such cases which managed to "carry on." Of two groups of cases those which were put on graded exercises left hospital sooner.

Captain STARLING said that D.A.H. was frequent in men of a psycho-neurotic temperament, but that D.A.H. produced psycho-neuroses was also true. There was also much evidence of a toxic factor. The incidence of many others was in childhood.

Captain RUDOLF, C.A.M.C., pointed out that prognosis was both immediate and ultimate. The effort-reaction was only a test of the former. True D.A.H. was neurasthenia. In estimating ultimate prognosis every possible means must be employed. Although cases of compensated aortic regurgitation could "carry on" without symptoms, it was unlikely that they would live a normal length of life. Organic lesions provided a handicap, although there might be no symptoms.

Colonel J. HAY had carried out similar methods in the Western Command. It would be difficult in civil life to get proper group training. He saw no reason why this should not be done in schools, or why a doctor should not control the games of his young patients, noting their reaction to them, in civil practice. He drew attention to the purely psycho-neurotic cases, and to the toxic cases, which might arise either from some noted infection, or from constantly acting less obvious toxæmia such as that of malaria, root-tuberculosis, and the alimentary form. The doctor must be optimistic of his treatment, and cases should go through a course of graduated exercises before they returned to work.

Major COTTIN had found that men with mitral stenosis without signs of engorgement, when submitted to graded exercises, reacted more efficiently than cases of D.A.H. Were not the symptoms in mitral stenosis, when existent, due to the same cause or causes as in D.A.H., in the absence of cardiac failure?

Dr. J. W. MACILWAINE pointed out that there was no clinical method of estimating the endurance of patients, for it depended not only upon "fitness," but also upon "willingness." In the Army endurance depended only on "fitness" for discipline determined the factor of "willingness." In dealing with the disposal of cardiac patients at a base in France, two principles were decided upon: (1) men with circulatory disorders without serious physical signs of disease and not markedly debilitated should not remain in hospitals, but be treated in convalescent depôts; (2) the only test of fitness was an effort test. The experience of a convalescent depôt was an education in one branch of military medicine. It taught how the "fit" soldier is formed from the recruit, and how the convalescent patient is re-formed into a "fit" reinforcement unit. This difficult problem was dealt with by the "silent arm" of the R.A.M.C. He was filled with admiration for those who carried on this enormous, arduous, thankless, and unpopular work. Two factors were outstanding in the ætiology of unfitness of the circulatory mechanism ("soldier's heart")—nerve stress (emotional) and intoxication (bacterial). The nervous element seemed to be most important. He went to the convalescent depôt as a cardiologist and came away having learnt the elements of practical psychology. He saw how by physical exercises, games, &c., the harness of discipline was gradually slipped on to the convalescent soldier and how the mental tone was improved by the psycho-motor tone induced by exercise, &c. He was satisfied that the involuntary neuro-muscular tone of heart, lungs, and guts was equally improved. This experience was in keeping with that met with in dealing with cardiac neurasthenics in civil life. The treatment was to remove all doubt in the man's mind as to the presence of cardiac disease and to give him confidence in this by making him take exercise—i.e., to endeavour to restore his "function of endurance."

Captain W. EDGECOMBE put in a plea for a uniform system of exercise tests for the use of pension boards, &c., and suggested that this should not include the use of special apparatus such as dumb-bells, but only comprise methods which tested by use of the body weight. He also suggested that the rhythm of the cardiac sounds might be recorded in metrical feet as used by poets and musicians—e.g., trochaic, spondaic, iambic, pyrrhic, dactylic, &c.

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## DEMONSTRATIONS.

### *Neurological Cases.*

A demonstration of interesting nervous cases was given on April 9th by the physicians and surgeons of the National Hospital for Paralysed and Epileptic. Dr. HOWARD TOOTH showed a case of Tabes Dorsalis, in which the usual signs were accompanied by atrophy of the supra-spinati, deltoids, triceps, supinator longus, and long extensors of the wrists and fingers, and of the intrinsic muscles of both hands.—Two cases of Syringomyelia were demonstrated, one an early case by Dr. RISIEN RUSSELL, the other, a bedridden patient who had been under observation for many years, by Dr. JAMES TAYLOR. The same physicians also showed a series of cases of Myasthenia Gravis, in one of whom the evidences of Graves's disease were also present.—Dr. FARQUHAR BUZZARD exhibited a case of Cerebral Tumour which grew probably from the acoustic nerve.—Among other cases of tumour of the central nervous system was one shown by Dr. GORDON HOLMES of a large endothelioma which had been removed by Colonel Percy Sargent from the right fronto-central region a fortnight before. The first symptom was a Jacksonian "fit," which was only succeeded later by optic neuritis, headache, and left-sided hemiplegia. Improvement had followed the operation.—Two other cases were of tumours which had compressed the first thoracic segment of the spinal cord, one under the care of Dr. GRAINGER STEWART, the other under that of Dr. HINDS HOWELL. Removal of the tumour in each case by Colonel Sargent had been followed by great and rapid improvement.—Colonel SARGENT demonstrated a series of cases of Primary and Deferred Suture of Peripheral Nerves, with and without the insertion of grafts.—Other war injuries were demonstrated by Dr. GORDON HOLMES. One interesting case was that of a wound of the spinal cord, produced by a stab, which had been followed an usually pure Brown-Séquard syndrome. The knife entered between the laminæ of the ninth and tenth thoracic vertebræ. In another case the evidence pointed to a lesion of the left side of the mid-brain following a shell explosion. There were paralysis of the left superior oblique and complete loss of pain and thermal sensibility of the whole of the right side, while the left arm and leg were ataxic and tremulous both in movement and at rest. There was no paresis and the reflexes were normal. The gait was cerebellar in type, speech indistinct, and nystagmus was present on ocular movement in all directions. A radiograph showed a doubtful fracture of the posterior fossa. A third case was one of *cerebellar injury*, produced by a fragment of shell, which passed through the cerebellum.—Dr. TAYLOR showed two brothers with Leber's Hereditary Optic Atrophy. That enlargement of the pituitary gland might be the cause was favoured by X ray evidence of considerable enlargement and of other changes of the sella turcica. Other cases were shown in which the diagnosis was still undetermined.

### *Diseases of the Respiratory Passages.*

At the Brompton Hospital for Consumption and Diseases of the Chest on April 9th Dr. DUNDAS GRANT showed cases of Tuberculosis and other Diseases of the Respiratory Passages.—Dr. CECIL WALL showed cases of Chronic Hydro-pneumothorax and Cholesterinous Pleural Effusion, and demonstrated the use of breathing exercises.—Dr. FENTON showed two cases of Pneumothorax and Mr. WARREN cases of Bronchiectasis After Operation.—A series of cases was shown by Dr. BATTY SHAW, including one of a Mediastinal Dermoid, an example of Hypertrophic Osteo-arthropathy of cardiac origin, and another of Non-tuberculous Disease of the Pulmonary Apex.—Dr. BURRELL showed, among other cases, some of Artificial Pneumothorax.—Dr. MAITLAND showed a case of cerebral embolism from the auricular appendix in a child with mitral stenosis.—Demonstrations were given in the X Ray Department by Dr. SHAW and Dr. S. MELVILLE and in the Pathological Laboratory by Dr. A. C. INMAN.

*Interesting Cases.*

At the Hospital for Sick Children, Great Ormond-street, on Friday, April 11th, a demonstration of interesting cases was given by members of the visiting staff.—Major A. F. VOELCKER showed several cases, including instances of Pericarditis, Fibroid Phthisis, Tuberculous Peritonitis, and one of von Jaksch's Anæmia which had benefited by arsenical treatment.—Mr. TYRRELL GRAY, among other interesting cases, showed some of spinal caries in which Albee's operation of bone-grafting had been done, and demonstrated that by this means time was saved and deformity minimised. He also showed three cases of Congenital Stenosis of the Pylorus after treatment by Rammstedt's operation (two of these were in girls, and in the other a preliminary circumcision had been performed—this procedure had not infrequently been found to render an operation on the pylorus unnecessary). Another case was one of Spastic Paraplegia which had improved after treatment by crushing the obturator nerves; another an example of Achondroplasia accompanied by rickets.—Dr. J. H. THURSFIELD exhibited a series of radiograms of Syphilitic Bone Changes in young children, with the object of demonstrating that characteristic changes might be present in the bones generally, although one only might display clinical evidences of the disease.—Dr. F. S. LANGMEAD showed two cases of Sclerodermia. One was that of a girl, aged 9, in whom it was general and had been present since birth, accompanied by sclerodactyly, myositis fibrosa, and fixation of joints. The other occurred in a Mongolian imbecile and was of the symmetrical localised form and nodular in character. In this case the skin was mottled, blue, and shiny, particularly in the extremities, a change which had preceded the sclerodermia by nine months. The object of the demonstration was to draw attention to the fact that sclerodermia was not only a change in subcutaneous tissues and skin, but that similar changes occurred in muscles and serous and synovial membranes.—Mr. O. ADDISON demonstrated the Method of Making Celluloid Splints, and spoke of their uses.

*Demonstration on Mine Gas Poisoning.*

Colonel D. DALE LOGAN gave a lecture-demonstration on April 9th, on Mining on the Western Front—its dangers with particular reference to gas poisoning. Few people realised, he said, that thousands of casualties occurred from CO poisoning. A very large proportion of these were the result of poisoning from shells, bombs, and aerial torpedoes bursting in dugouts, subways, cellars, concrete structures, and enclosed places, but many cases occurred in mining. Mining on the Western Front was started early in 1915. By the autumn of 1915 mine warfare had made huge strides, and with the increase in size of the explosive charges, more extensive mine systems, and greatly increased number of men employed (for a long period many thousands were engaged in underground warfare), the casualties from gas poisoning assumed serious proportions. As many of the men were skilled miners, whose places it was almost impossible to fill at the time, the wastage was affecting in a very marked way the efficiency of tunnelling companies. In September, 1915, he (Colonel Logan) was attached to the staff of the engineer-in-chief, to organise a system of rescue-work and protection against gas in mining. From investigations of conditions underground after a "blow," the manner in which casualties occurred the detection of CO in the blood of men a few minutes after they had been rescued, the post-mortem examination of a number of men, and of canaries killed by gas, there was no difficulty in coming to the conclusion that CO from the detonation of explosives was the poisonous factor in mine fighting. Orders were issued with reference to avoiding the more obviously preventable sources of accidents. One was that no man, however slightly gassed, should ascend the shaft without being roped and hoisted. The difficulties and dangers of this method of bringing up an unconscious man, the constriction of the chest, and the serious effect this might have in certain cases, the dangers of the rope slipping, and also the great exertion entailed in hauling a man along the galleries, led to the introduction of the mine stretcher designed by Lieutenant Penman, which proved of great value. The danger of entering an atmosphere which permitted walking a certain distance in it before perceptible symptoms of poisoning developed was not appreciated at first. The order "No man is to descend the shaft without rescue apparatus till the mine is reported clear of gas" resulted in a noticeable decrease in the number of casualties.

*Dangers and Preventive Measures.*

The lecturer then gave a description of explosives, their constitution, the different types used in the war, and the products of combustion, with particular reference to those used in mining. He said that the fact that in 1916 the enemy fired 700 mines and camouflets, and we nearly 750, would give some idea of the intensity of mine warfare waged, and of the opportunities for gas poisoning. The total charge in the mines at the Battle of Messines was considerably over one million pounds, some of them being charged with over 90,000 lbs. Several of the mines had been laid for 12 months and many for nine months, and were still effective when required, which showed how carefully the charges had been laid. The character of the work underground entailed considerable nervous strain. Listening under certain conditions was particularly nerve-wearing work and most hazardous. The listener's nervous system was in a state of tension, and the work was also monotonous and lonely and entailed absolute silence. The intense concentration of the mind, carried on during working hours, for many months and in silence, must be considered an important factor in the incidence of nervous affections in the miners.

The possibilities of gas poisoning of the infantry in crater fighting was discussed, and the methods adopted to prevent gas poisoning of the infantry who went through the huge craters at Messines a few minutes after the mines were blown up were described. The gases from the detonation of a high explosive included CO, H, and $CH_4$, all of which were combustible and, when present in the proper proportion, explosive. How these were produced, the phenomena of an underground explosion and its results, and the methods adopted to prevent them, were then described. The Proto apparatus was chosen for rescue work as it was the simplest and most efficient. For scouting and work which did not necessitate more than half an hour in the mine the Salvus was used. As an oxygen resuscitating apparatus the Novita was fixed upon; it was coupled with the box ready for immediate use, and the box and handle arranged in such a way that it could easily be carried down the shafts. The use of the apparatus was afterwards demonstrated.

*Rescue-work.*

The lecturer went on to describe the mine rescue organisations in France, the training in the schools, rescue-work in the trenches, and its dangers and difficulties. The training in the schools was very thorough, approximating as nearly as possible to the actual rescue-work. It included working at the face, either in clay or in chalk, driving and timbering galleries, recovery and disposal of the spoil, walking quickly, climbing vertical ladders, walking up an incline and recovering a solid substantial dummy from under débris, placing it on the mine-stretcher and bringing it to the surface. All the later tests had to be carried out in an irrespirable atmosphere. It was only by strenuous training that the men were given the necessary confidence in the apparatus which was all-important in rescue-work and which permitted them to face the most trying and difficult conditions. The only way to get good results from first aid in the trenches was to have a rigid line of treatment; all should have a thorough working knowledge of the administration of oxygen and artificial respiration. Not only were many valuable lives saved by the rescue men, but much useful work was done by them after "blows" in restoring ventilation, clearing galleries, &c. Two instances where mines were charged and tamped by rescue-men wearing apparatus were then given. In both instances work was at a standstill owing to the dangerously gassy condition of the mines and the enemy was approaching within striking distance of our trenches.

*Special Medical Service.*

Owing to the excessive wastage amongst the tunnelling companies and the great difficulty in getting recruits a special medical service was formed for these companies, the medical officers chosen being expert in the treatment of miners as a class and the diseases peculiar to their calling, and with a knowledge of gas poisoning in mines. All had been for years in mining practices, several had done special work in industrial diseases, three had previously had considerable experience in connexion with mine explosions and mine rescue-work, and one had gained the Albert Medal at the Darran Colliery explosion. The devotion of these officers did a great deal to make possible such great mining feats as occurred on the Somme, Arras, and Messines, and the

wonderfully varied and skilled work which tunnelling companies did. The special knowledge of the miners and their diseases by the medical officers saved the Army many hundreds of skilled men, and was a striking testimony to the value of such a specialist service.

*Demonstration on the Throat in Acute Infectious Diseases.*

Dr. H. DRINKWATER gave a lantern demonstration at St. Thomas's Hospital on April 10th of coloured drawings of the throat in various acute infectious diseases, in order, he said, to assist in their diagnosis by the naked-eye examination alone, and to show that in the great majority of cases this could be depended upon without recourse to the microscope or to a bacteriological test.

*Diphtheria.*

The patch was generally described as resembling wash-leather, but this was at a late stage and the diagnosis should have been made before this condition was reached.

*Texture.*—The patch formed a *raised deposit* on the mucous membrane and was not an excavation or an ulcer, as in scarlet fever and influenza.

*Distribution.*—The patch was single in any one of the faucial areas on each side (the tonsillar, the uvular, and the palatal, including the anterior pillar). A patch might increase in size centrifugally, and its margin might unite with a patch on another area, but no separate islets or colonies were sent out. It was only in the late stage of diphtheria, when the patch was disappearing, that several patches might be seen in any single area. The tonsillar area was the one most frequently involved, the uvular next in order.

*Colour.*—When seen early it was most often bluish white, sometimes almost pure white, and occasionally yellowish. Later it might be pale brown, or covered with grey spots, or blackish.

*Margin of patch.*—This was nearly always sharply defined and equally so around the whole circumference, and the patch was of the same thickness throughout.

Diphtheria closely resembled, and was sometimes impossible to distinguish from, Vincent's angina. The two diseases were identical as regards the texture of the patch, its distribution and its colour. In a fair number of cases Vincent's angina showed two distinguishing peculiarities: (*a*) it tended to become much thinner below than above—it was sometimes impossible to tell where it ended; and (*b*) a narrow and deep depression might be seen in the centre of the patch, especially over the tonsil. At a later stage there was erosion of the uvula, but the diagnosis should be reached before this stage.

The *temperature* in diphtheria gave no positive indication; in the majority of cases it was below 100° F. after the second day. If in a doubtful case the temperature was then over 102° it was almost certainly not a case of diphtheria. Both diseases might occur together in the same patient.

*Influenza.*

If the throat was affected so as to raise a suspicion of diphtheria or Vincent's angina the patches would be seen to be confined to the tonsillar area and generally of a bright yellow colour; they were either depressed, or, if raised, they could easily be wiped away with a probe, and they were frequently multiple. The throat was generally more painful and the temperature higher.

In *scarlet fever* the sore was an ulcer and there was intense congestion with a punctate rash.

In *follicular tonsillitis* there was great swelling of the tonsils, and the discharge could be seen pouring out of *several* of the tonsillar crypts.

At the Maudsley Neurological Clearing Hospital on April 11th Dr. F. W. MOTT demonstrated (1) cases of war neuroses with and without wounds and the methods of treatment employed; (2) the changes in the central nervous system in shell shock and gas poisoning.

Dr. F. GOLLA, Captain, R.A.M.C.(T.), demonstrated the psycho-galvanic reflex and the use of the rotating chair in relation to space perception.

Dr. L. E. STAMM demonstrated an apparatus designed for testing the quickness and reliability of the mental reaction and used by him in connexion with the Royal Air Force.[1]

[1] THE LANCET, 1919, i., 206.

*Venereal Disease.*

At the Military Hospital, Rochester Row, Colonel L. W. HARRISON, each afternoon, gave a demonstration on Venereal Disease. The demonstration was divided into three parts:—A. *Syphilis:* (1) examination of patients; (2) spirochæte specimens under dark-ground illuminations; (3) apparatus for the administration of antisyphilitic remedies. B. *Prevention of Venereal Disease—Gonorrhœa:* (1) early treatment; (2) abortive treatment; (3) irrigation; (4) instruments for the diagnosis and treatment of chronic gonorrhœa; (5) cases of interest. C. *Laboratory:* microscopical specimens; complement-fixation in gonococcal infections; complement-fixation in syphilis; gonococcal vaccines.

## THE EXHIBITION.

IN spite of the short time which the exhibitors had at their disposal to select and arrange their exhibits they succeeded in presenting a well-planned collection of materials of decided interest to the medical visitor. This interest centred most in the sections comprising (I.) surgical instruments and hospital appliances, and (II.) drugs, both sections presenting numerous new developments arising out of the events of the war. The exhibits of special foods were small in number and for the most part familiar, and as ancillary but interesting subjects of demonstration were the exhibits of the saline waters of Droitwich and the remarkably pure waters of Malvern. We deal with the two groups above alluded to in the following notes.

I. *Surgical Instruments and Hospital Appliances.*

This section formed the major portion of the exhibits brought together in the space afforded. Electro-medical apparatus (all British made) was the principal feature of the Medical Supply Association, Ltd. (167–185, Gray's Inn-road, London, W.C.). These included the "galvanoset" apparatus, comprising a liquid rheostat for adapting the service supply of the electric current to an intensity suitable for medical treatment; the "limpet" system of electrodes, which secures efficient contact of the body surfaces with the electrode; and a diathermy apparatus directly connected with the alternating current, and securing the passing of currents of heavy ampèrage through the body. At the stall of Messrs. Allen and Hanburys, Ltd. (48, Wigmore-street, Cavendish-square, London, W. 1), a wide range of surgical instruments and hospital appliances was on view. Amongst the former were included approved forms of cystoscopes, urethroscopes, and other urological instruments, and in the latter the St. Bartholomew's Hospital pattern operation table. Shipway's warm anæsthetic apparatus was also available for inspection, and Souttar's thermos saline infusion apparatus attracted considerable interest at this stall. Besides a good assortment of surgical instruments of all kinds, Mr. Henry Lewis (2, Westmoreland-street, New Cavendish-street, London, W.) exhibited examples of his deformity appliances, notably amongst which was a walking instrument for toe-drop. There were also shown specimens of surgical knives hardened and tempered by a new process, securing a perfect edge. Some fine examples of the results of employing the Sunic X-ray plates were shown by Messrs. Watson and Sons (43, Parker-street, Kingsway, London, W.C.), and a recent advance in radiology was here in the stereo-fluoroscope, which produces the image in relief on the screen. This exhibit included specimens of radium salts for therapeutic application, and radium drinking water. Messrs. Thomas Holland and Son (16, South Audley-street, Grosvenor-square, London, W.) showed their well-known appliances for the feet, including instep supports and surgical boots for shortened limbs and flat foot. The applications of ozone in medicine were well illustrated in the exhibit of Messrs. Ozonair, Ltd. (96, Victoria-street, Westminster, London, S.W.). Here were shown apparatus for the treatment of respiratory and pulmonary trouble, for purifying the air of the sick room, operating theatres, and wards, for disinfection of mortuaries and dissecting rooms, and for injecting ozonised oxygen into foul ulcers and suppurating wounds. Close by were exhibited specimens of the Coolidge X ray tube, well known for its efficiency in the production of X rays, by the British Thomson-Houston Co., Ltd. (Mazda House, 77, Upper Thames-street, London, E.C. 4). Ingenious and effective designs of hernia appliances based upon a study of the symptoms

and treatment of this disorder were amply illustrated in the exhibit of Messrs. Smith and Co. (59, Gray's Inn-road, London). The Dennison Manufacturing Co., Ltd. (Sardinia House, 52, Lincoln's Inn-fields, Kingsway, W.C.), showed examples of their crêpe paper bandages, which, being remarkably elastic as well as strong, are well adapted as bandages for the limb. The material is sterilisable by steam without damage. The exhibit included paper towels, sputum papers, and serviettes. The oxygen apparatus (liquid and gaseous) at the stall of Messrs. George Kent, Ltd. (199–201, High Holborn, W.C. 1), attracted a good deal of attention. The design of valves, &c., render them convenient for use in the aeroplane reaching high altitudes; and there were also shown sets of fittings for mine rescue-work and medical application.

Amongst the glassware shown by Messrs. R. B. Turner and Co. (9, 10, and 11, Eagle-street, London, W.C. 1) were some hospital and surgical appliances and special ware made for research work and special laboratory operations: the scarcity of special laboratory glassware has been felt severely through the war in scientific institutions. There was a good display of modern surgical instruments by Messrs. Mayer and Phelps (Chiron House, 59 and 61, New Cavendish-street, London, W. 1), including oto-rhino-laryngological, urological, and gynæcological instruments and anæsthetic administration appliances. Messrs. Newton and Wright's stall (72, Wigmore-street, W. 1) was occupied chiefly by X ray apparatus, amongst which was the Universal X ray couch, intended for use with the tube either above or below, and providing also for lateral movement up to the very edge of the three-ply top. Lead protective sheets are provided in the plant, and also an excellent assortment of X ray work accessories adding to the efficiency of the observations. Hospital beds and furniture were well represented in the exhibit of Messrs. J. Nesbit, Evans, and Co. (Adderley-street, Birmingham). As examples may be mentioned the easy wheeling bed for sanatoriums, the anti-sagging bed, and a bedstead which may be inclined at three different angles at either head or foot-end. Messrs. Chas. Hearson and Co., Ltd. (235, Regent-street, London, W. 1), showed their well-known incubators heated by gas, oil, or electricity, the regulation and adjustment of temperature being accurately obtained. General interest was shown in the Haldane apparatus for the therapeutic administration of oxygen at the stall of Messrs. Siebe, Gorman, and Co., Ltd. (187, Westminster Bridge-road, London, S.E.). The exhibit included the oxygen-breathing apparatus used for working in poisonous atmospheres, and respirators for all purposes. A large variety of surgical instruments, an improved pattern of a curved irrigating dilator, ophthalmoscopes, and cystoscopes appeared in the exhibit of the Surgical Manufacturing Co. (54, Mortimer-street, London, W.). A new tonsillotome, designed by Mr. Somerville Hastings, was also shown here, and aseptic hospital furniture and sterilised dressings. Some interesting accessories for X ray work were exhibited by Mr. Alfred E. Dean (Leigh-place, Brooke-street, Holborn, London, E.C.1), including the zenith diascope, stereoscope, the Gamlen localiser, and a specially designed tube stand. Messrs. W. H. Bailey and Son (38, Oxford-street, London, W. 1) put forward as special features at their exhibit a consulting-room couch, an improved surgeon's midwifery case of compact design, and sundry abdominal belts. Messrs. Down Bros., Ltd. (21 and 23, St. Thomas's-street, London, S.E. 1), exhibited all that is representative of instruments used in modern surgery, more recent examples being given, as Allbee's electro-operative bone instruments, Hey Groves's motor outfit for bone surgery, and Sir Arbuthnot Lane's instruments for the operative treatment of fractures. A very interesting and comprehensive display of X ray and electro-medical apparatus was made by Messrs. Harry W. Cox, Ltd. (42–46, Wigmore-street, London, W.), including specially designed tube stands, couches, interrupters, and fluorescent screens. Examples of some well-designed liquid oxygen containers appeared at the stall of the Hydrogen, Oxygen, and Plant Co., Ltd. (1, Albemarle-street, London, W. 1), and accessories for the administration of oxygen, as well as materials (L'Oxylithe) for generating the gas.

A very useful and convenient nursing trolley, designed by Nurse Mote, was exhibited by Messrs. Arnold and Sons (Giltspur-street, London, E.C. 1). This is a device for the removal of the patient from the bed so that the bed may be made without any physical exertion on the part of the nurse, and without inconvenience and discomfort to the patient. The trolley is wheeled to the side of the bed, the top half overlapping the mattress. It can be adjusted to any level, enabling the patient to be moved on to it without effort. The stability of the trolley is secured by a frame passing under the bed.

### II. *Drugs.*

Undoubtedly, the considerable interest shown in this section was due to the fact that so many of the valuable products exhibited were not manufactured in this country prior to the war. Striking evidence of this appeared at the stall of the Boots Pure Drug Company, of Nottingham. Practically all the specimens shown here were examples of British-made fine chemicals. Amongst these were both synthetic and natural products. In the former category mention may be made of acetanilide, acetylsalicylic acid (aspirin), benzamine, butyl chloral hydrate, hexamine, phenacetin, salicylic acid, and in the latter atropine and its salts (prepared in large quantities during the war), cantharidin, and digitalin. Besides there were shown examples of the important synthetic substances acriflavine, chloramin-T, halazone, and proflavine. This company have also instituted and continued the manufacture of saccharin on a large scale. The whole exhibit was a most creditable example of British enterprise. Messrs. Burgoyne, Burbidges, and Co., Ltd. (East Ham, London, E.), also gave examples of preparations not made in this country prior to 1914, to which they have given special attention. There was shown for instance a fine specimen of the hypnotic chloralformamide (syn. chloralamid) and its related substances chloral and formamide. Chlorbutol was also shown and camphor monobromate and tri-chloracetic acid. The exhibit included many well-prepared specimens of inorganic medicinal chemicals, the bismuth salts and lead acetate and zinc sulphate being good examples. Essential oils formed an important share of the exhibits by W. J. Bush and Co., Ltd. (Ash Grove, Hackney, E. 8), a department of their industry which had developed before the war, though they turned attention to the preparation of those synthetic drugs of immediate importance in medicine when the supply was threatened. The series of exhibits thus includes the salicylates and benzoates, and corrresponding acids and esters. Messrs. Burroughs Wellcome & Co. (Snow Hill Buildings, E.C. 1) had already prepared synthetic products, many of them usually derived from the subsequently enemy countries, before hostilities commenced. As examples we may quote the organic arsenic derivatives used in the treatment of syphilis. The firm had, in fact, started to break down foreign monopoly with regard to a number of products—as, for example, pilocarpine, atropine, eserine, homatropine and its salts. Specimens of these were shown in addition to a series of vaccines and serums. The valuable record of research carried out in the chemical and physiological laboratories of this firm was evidenced in many other products shown in an interesting exhibit. Some particularly pure specimens of acetyl-salicylic acid and cystopurin were exhibited by Genatosan, Ltd. (12, Chenies-street, London, W.C. 1), and general interest was shown in their series of detoxicated vaccines exhibited. A note appeared on these vaccines in our issue of March 8th, in which it was recorded that during the past year the author had conducted numerous researches on the removal of the endo-toxins from the gonococcus and other organisms in order to produce non-toxic vaccines which could be injected in sufficiently large doses to develop greatly increased immunising power. Organo-therapy was for the most part represented in the exhibit of Messrs. Parke, Davis, and Co. (50, Beak-street, Regent-street, W. 1), where some new glandular products were shown, examples occurring in pituitary gland tablets, anterior and posterior lobe tablets, ovarian substance, parathyroid, pineal, and tetra-glandular tablets.

Messrs. Southall Bros. and Barclay, Ltd. (Lower Priory, Dalton-street, Birmingham), in addition to their "vitafer," a combination of casein and glycerophosphates, exhibited a series of preparations replacing supplies hitherto obtained abroad. Such were cystoformin (hexamine and sodium acetate), aldemint (formaldehyde tablet), phenoquin (atophan—i.e., phenyl-chinolin-carbonic acid), said to increase excretion of uric acid, and neo-phenoquin, the lithium salt of phenoquin. Outstanding

amongst the exhibits of Messrs. Howards and Sons, Ltd. (Ilford and Stratford, London), were specimens of their standard ether with a guaranteed boiling-point lying between 34·5° and 35·0° C., and specific gravity limits between 0·7207 and 0·7210. They have supplied, it is stated, enormous quantities to the Army Medical Department, and the pure anæsthetic is put up in 1 lb., ½ lb., and ¼ lb. dark amber bottles of special shape suiting the convenience of the administrator. Besides a number of glandular substances, Messrs. Allen and Hanburys (Bethnal Green, E. 2) exhibited specimens of "eupepton," which is satisfactorily replacing Witte's peptone for culture work in bacteriology. The exhibit of Messrs. C. J. Hewlett and Son, Ltd. (35–42, Charlotte-street, E.C. 2), included a series of physiologically standardised tinctures (ergot, digitalis, cannabis indica, strophanthus) and some useful skin lotions (evapogens) consisting of well-known skin medicaments dissolved in rapidly evaporating spirit. Specimens of "yadil" were shown by Messrs. Clement and Johnson (19, Sicilian-avenue, W.C. 1), who describe this fluid antiseptic as "trimethenal allylic carbide compound," showing a coefficient equal to carbolic acid but non-toxic. Used internally it is stated to have acted as a preventive of the serious complications following influenza. Messrs. Oppenheimer, Son, and Company's exhibit (179, Queen Victoria-street, London, E.C. 4) was an interesting one, and in addition to their well-known palatinoids and bi-palatinoids they displayed as novelties a series of colloidal preparations known as "oscols," prominent amongst these being silver, copper, mercury, iodine, and sulphur colloidal solutions.

In this review no attempt has been made to exhaust the list of things shown by any of the firms mentioned; only those products have been briefly noticed which are more or less of recent introduction or which owe their origin to the events of war.

## SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

*The Influenza Epidemic: Government Commission's Report and Recommendations.*

THE report of the Government Commission on the recent epidemic of influenza was laid before the Union Parliament at Cape Town on Feb. 18th. The number of deaths from the epidemic was 139,472, of which 11,727 were Europeans, and 127,745 non-Europeans. Of these, 5855 Europeans belonged to the Cape Province (1458 to the Cape Town Division), 3267 to the Transvaal, 2242 to the Free State, and 363 to Natal; of the non-Europeans 81,253 belonged to the Cape, 25,397 to the Transvaal, 7495 to the Free State, and 13,600 to Natal. The death-rate per cent. of all persons attacked was highest in the Cape; the death-rate per 1000 Europeans was highest in the Free State, and, in the case of non-Europeans, was highest in the Cape Province.

The Commission states that the evidence of bacteriologists and medical practitioners with regard to the use of vaccines in the prevention and treatment of the epidemic is so controversial that it was impossible to make definite recommendations on the point. Nevertheless, vaccines, when properly used, caused no ill-effects, and, in the opinion of many, did do a certain amount of good. The recommendation already made to the Minister of the Interior, that immediate research be instituted, is reiterated, and the Commission considers that the issue of vaccines during the epidemic by the Department of Health was justified.

The Commission welcomes the Health Bill now before the Union Parliament, which provides for a Ministerial Portfolio of Health, and reports that the Government should establish immediately an autonomous efficient Health Department on modern lines, the head of which should be directly responsible to the Minister; that the department should consist of a body of experts in public health and hygiene of such professional standing that the general public and the health officers of the country would confidently look to them for expert advice in every domain of public health; that the medical officer of health for the Union should be a man of broad administrative experience and ability, and his assistants should be specialists in the various branches. Efficiency rather than academical qualifications should be the criterion for these appointments, and salaries should be such as to attract the best type.

Other recommendations include rough mobilisation plans for combating epidemics; the establishment of a bureau for the collection and dissemination of information on public health matters; the training of the public in the principles of hygiene, first aid, and nursing; the subsidising of the Red Cross Society and the St. John Ambulance Association; the compulsory instruction of girls above the age of 13 in hygiene, first aid, and home nursing; the instruction of boys in the first two subjects; and the institution of a complete course in hygiene and home nursing in teachers' training colleges. Medical research, the Commission urges, should be fostered through the medical schools, Government veterinary research laboratories, and the South African Institute of Medical Research. It is suggested that special terms should be offered in order to induce medical men to settle in rural districts, that permanent hospitals should be provided in the rural areas, and that an endeavour should be made to overcome ignorant prejudice against admission to hospital.

Since the issue of the above report there has been a slight recrudescence of influenza at Cape Town and Durban.

*Death of Dr. Stephen Boxer Syfret.*

Stephen Boxer Syfret, beloved alike by his fellow practitioners and by the Cape Town community at large, was drowned while bathing in Mossel River on March 3rd at the age of 54. His father was the founder of a leading Cape Town mercantile house, and he himself was born at Oak Lodge, Mowbray, a suburb of Cape Town, lived there, and was buried from his old home. He was educated at Diocesan College, Rondebosch, and completed his medical studies at Trinity Hall, Cambridge, where he took his M.B. degree. Returning to the Cape, he was for a time associated with Dr. (now Sir Edmond) Stevenson at Rondebosch, near Mowbray, and afterwards practised for himself at Mowbray, where for over a quarter of a century he was one of the most familiar figures. His widow, who survives him with their six children, is a daughter of Mr. T. S. McEwen, C.M.G., late general manager of the Cape Government Railways. A movement is on foot to honour Dr. Syfret with a fitting memorial.

The Durban Town Council at its meeting on March 7th confirmed the appointment made by its London agents of Dr. Georgina Darling as lady doctor to the municipality.

## URBAN VITAL STATISTICS.

(Week ended April 12th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had steadily declined from 35·7 to 17·9 in the six preceding weeks, further fell to 16·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 17·0, against 17·1 per 1000 in the previous week; among the remaining towns the rates ranged from 5·7 in Gloucester and in Newport (Mon.), 7·4 in Leyton, and 7·9 in Ipswich, to 26·7 in Gateshead, 27·3 in Wakefield, 28·0 in Middlesbrough, and 29·3 in Exeter. The principal epidemic diseases caused 215 deaths, which corresponded to an annual rate of 0·7 per 1000, and included 70 from measles, 52 from diphtheria, 42 from whooping-cough, 30 from infantile diarrhœa, 16 from scarlet fever, 4 from enteric fever, and 1 from small-pox. Measles caused a death-rate of 1·4 in Sheffield, 4·8 in Rotherham, and 7·9 in Middlesbrough, and whooping-cough of 1·9 in Stoke-on-Trent. The fatal case of small-pox belonged to the metropolitan borough of Islington. The deaths attributed to influenza, which had declined from 3889 to 569 in the six preceding weeks, further fell to 468, and included 105 in London, 30 in Birmingham, 22 in Sheffield, 21 in Manchester, 17 in Hull, 16 in Leeds, and 14 in Rhondda. There were 4 cases of small-pox, 1072 of scarlet fever, and 1194 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 6, 1031, and 1158 respectively at the end of the previous week. The causes of 47 deaths in the 96 towns were uncertified, of which 10 were registered in Liverpool, 6 in Birmingham, and 3 each in London, Bootle, and Manchester.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,505,000 persons, the annual rate of mortality, which had declined from 40·0 to 18·5 in the six preceding weeks, further fell to 17·3 per 1000. The deaths from influenza numbered 12, while in 34 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 10 and 59 respectively. The 415 deaths in Glasgow corresponded to an annual rate of 19·3 per 1000, and included 45 from whooping-cough, 18 from measles, 4 from infantile diarrhœa, and 3 from diphtheria. The 102 deaths in Edinburgh were equal to a rate of 15·8 per 1000, and included 5 from whooping-cough and 1 from diphtheria.

*Irish Towns.*—The 196 deaths in Dublin corresponded to an annual rate of 25·2, or 7·4 per 1000 below that recorded in the previous week, and included 23 from influenza and 2 each from scarlet fever, whooping-cough, and infantile diarrhœa. The 184 deaths in Belfast were equal to a rate of 23·9 per 1000, and included a fatal case of infantile diarrhœa.

(Week ended April 19th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had steadily declined from 35·7 to 16·9 in the seven preceding weeks, further fell to 14·3 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 14·1, or 2·9 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 5·6 in Wallasey, 6·2 in Croydon, and 6·5 in Wakefield, to 22·4 in Aberdare, 22·6 in Rotherham, 23·1 in Merthyr Tydfil, and 27·1 in Middlesbrough. The principal epidemic diseases caused 189 deaths, which corresponded to an annual rate of 0·6 per 1000, and included 61 from measles, 39 from diphtheria, 38 from infantile diarrhœa, 35 from whooping-cough, 10 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 1·2 in Sheffield, 3·2 in Rotherham, and 8·7 in Middlesbrough, and whooping-cough of 1·7 in Stoke-on-Trent. The deaths attributed to influenza, which had declined from 3889 to 463 in the seven preceding weeks, further fell to 347, and included 71 in London, 27 in Birmingham, 17 in Manchester, 15 in Sheffield, and 11 in West Ham. There were 2 cases of small-pox, 1057 of scarlet fever, and 1189 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4, 1072, and 1194 at the end of the previous week. The causes of 45 deaths in the 96 towns were uncertified, of which 13 were registered in Birmingham, 10 in Liverpool, and 3 in Southend-on-Sea.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had declined from 40·0 to 17·3 in the seven preceding weeks, further fell to 15·3 per 1000. The deaths from influenza numbered 4, while in 34 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 12 and 34 respectively. The 346 deaths in Glasgow corresponded to an annual rate of 16·1 per 1000, and included 33 from whooping-cough, 14 from measles, 2 from infantile diarrhœa, and 1 each from scarlet fever and diphtheria. The 105 deaths in Edinburgh were equal to a rate of 16·3 per 1000, and included 11 from whooping-cough, 2 from measles, and 1 each from diphtheria and infantile diarrhœa.

*Irish Towns.*—The 177 deaths in Dublin corresponded to an annual rate of 22·8, or 2·4 per 1000 below that recorded in the previous week, and included 20 from influenza, 3 from whooping-cough, and 1 from infantile diarrhœa. The 131 deaths in Belfast were equal to a rate of 17·0 per 1000, and included a fatal case of infantile diarrhœa.

## VITAL STATISTICS OF LONDON DURING MARCH, 1919.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·5 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·2, 4·5, and 4·1 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Paddington, Kensington, the City of Westminster, Hampstead, Stoke Newington, Finsbury, and the City of London; and the highest in Shoreditch, Bethnal Green, Stepney, and Greenwich. Seven cases of small-pox were notified during the month, against 1, 7, and 0 in the three preceding months; of these cases, 6 belonged to St. Pancras and 1 to Islington. The prevalence of scarlet fever was about equal to that in the preceding month; this disease was proportionally most prevalent in Fulham, Shoreditch, Bethnal Green, Stepney, Bermondsey, and Deptford. The Metropolitan Asylums Hospitals contained 1009 scarlet fever patients at the end of the month, against 1087, 1043, and 1075 at the end of the three preceding months; the weekly admissions averaged 126, against 136, 128, and 139 in the three preceding months. The prevalence of diphtheria was about 10 per cent. higher than in February; the greatest prevalence of this disease was recorded in Hackney, Bethnal Green, Stepney, Southwark, Greenwich, and Lewisham. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1089, 1170, and 1163 at the end of the three preceding months, numbered 1152 at the end of March; the weekly admissions averaged 164 against 146, 164, and 153 in the three preceding months. Thirteen cases of enteric fever were notified during the month, agreeing with the number notified in the preceding month; of these, 4 belonged to Lambeth, 2 to Chelsea, and 2 to Poplar. There were 16 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 23, 23, and 18 at the end of the three preceding months; the weekly admissions averaged 3, against 1, 3, and 2 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, the City of Westminster, Southwark, Bermondsey, and Deptford. Nine cases of puerperal fever were notified during the month; of these 2 belonged to Kensington. Of the 25 cases of cerebro-spinal meningitis 3 belonged to each of the metropolitan boroughs of Islington, Poplar, Lambeth, and Lewisham; while the one case of poliomyelitis belonged to St. Pancras.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended March 29th the deaths of 6452 London residents were registered, equal to an annual rate of 20·9 per 1000; in the three preceding months the rates had been 18·5, 15·6, and 28·5 per 1000. The death-rates ranged from 15·7 in Lewisham, 16·1 in Deptford, 17·4 in Woolwich, 17·8 in the City of London, 18·4 in Hampstead, and 18·7 in Greenwich, to 24·0 in St. Pancras, 24·2 in St. Marylebone, 24·4 in Holborn, 24·7 in Finsbury, and 26·0 in Shoreditch. The 6452 deaths from all causes included 163 which were referred to the principal infectious diseases; of these, 1 resulted from small-pox, 25 from measles, 14 from scarlet fever, 58 from diphtheria, 15 from whooping-cough, 6 from enteric fever, and 44 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in the City of Westminster and the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Finsbury, Bethnal Green, Camberwell, and Lewisham; and the highest death-rates in Kensington,

## ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1919.

(*Specially compiled for* THE LANCET.)

| CITIES AND BOROUGHS. | Estimated civil population, 1917. | Notified Cases of Infectious Disease. | | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhœa and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | |
| LONDON... ... .. | 4,026,901 | 7 | 531 | 639 | — | 13 | — | 9 | 155 | 25 | 1 | 1380 | 4·5 | 1 | 25 | 14 | 58 | 15 | 6 | 44 | 163 | 0·5 | 6452 | 20·9 |
| *West Districts :* | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington ... ... | 122,507 | — | 7 | 9 | — | — | — | — | 3 | 3 | — | 26 | 2·8 | — | 3 | 1 | 2 | — | — | — | 6 | 0·6 | 206 | 21·9 |
| Kensington ... ... | 151,535 | — | 12 | 17 | — | — | — | 2 | 2 | — | — | 33 | 2·8 | — | 2 | 1 | 2 | — | — | 6 | 11 | 0·9 | 256 | 22·0 |
| Hammersmith ... | 114,952 | — | 20 | 14 | — | 1 | — | — | 2 | 1 | — | 38 | 4·3 | — | — | — | 4 | — | — | 6 | 10 | 1·1 | 183 | 20·8 |
| Fulham ... ... ... | 145,186 | — | 31 | 19 | — | — | — | 1 | 2 | — | — | 53 | 4·8 | — | 2 | 1 | 2 | 2 | 1 | 3 | 11 | 1·0 | 217 | 19·5 |
| Chelsea ... ... | 57,368 | — | 8 | 4 | — | 2 | — | — | 1 | — | — | 15 | 3·4 | — | — | 1 | — | 1 | — | — | 2 | 0·5 | 99 | 22·5 |
| City of Westminster | 122,046 | — | 5 | 5 | — | — | — | — | 11 | — | — | 21 | 2·2 | — | — | — | — | — | — | — | — | — | 189 | 20·2 |
| *North Districts :* | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone ... | 92,796 | — | 6 | 11 | — | — | — | — | 5 | — | — | 22 | 3·1 | — | 2 | — | — | — | 1 | 1 | 4 | 0·6 | 172 | 24·2 |
| Hampstead ... ... | 76,649 | — | 5 | 9 | — | — | — | — | 3 | — | — | 17 | 2·9 | — | — | — | 2 | — | — | 1 | 3 | 0·5 | 107 | 18·4 |
| St. Pancras ... ... | 186,600 | 6 | 22 | 26 | — | — | — | — | 9 | — | 1 | 64 | 4·5 | 1 | — | 1 | 2 | 2 | — | 3 | 9 | 0·6 | 344 | 24·0 |
| Islington ... ... ... | 297,102 | 1 | 31 | 49 | — | — | — | 1 | 12 | 3 | — | 97 | 4·3 | — | 2 | 2 | 3 | 1 | — | 2 | 10 | 0·4 | 520 | 22·8 |
| Stoke Newington... | 47,426 | — | 4 | 4 | — | — | — | 1 | — | — | — | 9 | 2·5 | — | 1 | — | 2 | — | — | — | 3 | 0·8 | 84 | 23·1 |
| Hackney ... ... ... | 196,598 | — | 31 | 46 | — | 1 | — | — | 5 | — | — | 83 | 5·5 | — | 1 | 3 | 8 | 1 | 1 | 1 | 15 | 1·0 | 291 | 19·3 |
| *Central Districts :* | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn ... ... ... | 35,303 | — | 2 | 6 | — | — | — | — | 1 | 1 | — | 10 | 3·7 | — | — | — | 2 | — | — | — | 2 | 0·7 | 66 | 24·4 |
| Finsbury ... ... ... | 68,011 | — | 5 | 7 | — | — | — | — | 1 | — | — | 13 | 2·5 | — | — | — | 1 | — | — | — | 1 | 0·2 | 129 | 24·7 |
| City of London ... | 16,138 | — | 1 | — | — | — | — | — | — | — | — | 1 | 0·8 | — | — | — | — | — | — | — | — | — | 22 | 17·8 |
| *East Districts :* | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch ... ... | 89,675 | — | 22 | 14 | — | — | — | — | 5 | 2 | — | 43 | 6·3 | — | — | — | — | — | — | 2 | 2 | 0·3 | 179 | 26·0 |
| Bethnal Green ... | 107,362 | — | 30 | 25 | — | — | — | 1 | 6 | 1 | — | 63 | 7·6 | — | — | — | — | — | — | 1 | 1 | 0·1 | 157 | 19·1 |
| Stepney ... ... ... | 232,010 | — | 42 | 57 | — | 1 | — | — | 12 | 2 | — | 114 | 6·4 | — | — | 1 | 5 | — | 1 | 6 | 13 | 0·7 | 379 | 21·3 |
| Poplar ... ... ... | 143,443 | — | 12 | 17 | — | 2 | — | — | 5 | 3 | — | 39 | 3·5 | — | — | — | 2 | 1 | 1 | 2 | 6 | 0·5 | 236 | 21·4 |
| *South Districts :* | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark ... ... | 167,936 | — | 23 | 37 | — | — | — | 1 | 10 | — | — | 71 | 5·5 | — | — | — | 5 | — | — | 2 | 7 | 0·5 | 296 | 23·0 |
| Bermondsey ... ... | 107,635 | — | 20 | 17 | — | — | — | — | 7 | — | — | 44 | 5·3 | — | — | 1 | 1 | — | — | 1 | 3 | 0·4 | 185 | 22·4 |
| Lambeth ... ... ... | 272,038 | — | 33 | 26 | — | 4 | — | 1 | 9 | 3 | — | 76 | 3·6 | — | — | — | 5 | 2 | 1 | 3 | 11 | 0·5 | 453 | 21·7 |
| Battersea ... ... ... | 160,023 | — | 13 | 20 | — | — | — | — | 6 | 2 | — | 41 | 3·6 | — | 5 | — | — | — | — | — | 5 | 0·4 | 235 | 20·2 |
| Wandsworth ... ... | 300,787 | — | 39 | 35 | — | 1 | — | 1 | 3 | 1 | — | 80 | 3·5 | — | 5 | — | 3 | — | — | — | 8 | 0·3 | 459 | 19·9 |
| Camberwell ... ... | 239,461 | — | 37 | 38 | — | — | — | — | 11 | 1 | — | 87 | 4·7 | — | — | 1 | 1 | — | — | 2 | 4 | 0·2 | 362 | 19·7 |
| Deptford ... ... ... | 103,527 | — | 24 | 12 | — | — | — | — | 7 | — | — | 43 | 5·4 | — | 2 | — | — | — | — | — | 2 | 0·3 | 128 | 16·1 |
| Greenwich ... ... | 90,440 | — | 15 | 59 | — | — | — | — | 2 | — | — | 76 | 11·0 | — | — | — | 3 | 1 | — | 1 | 5 | 0·7 | 130 | 18·7 |
| Lewisham ... ... | 161,405 | — | 20 | 33 | — | — | — | — | 3 | 3 | — | 59 | 4·8 | — | — | — | 1 | — | — | 1 | 2 | 0·2 | 194 | 15·7 |
| Woolwich... ... ... | 131,942 | — | 11 | 23 | — | 1 | — | — | 7 | — | — | 42 | 4·1 | — | — | 1 | 2 | 4 | — | — | 7 | 0·7 | 176 | 17·4 |
| Port of London ... | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

Hammersmith, Fulham, Stoke Newington, and Hackney. The death from small-pox belonged to St. Pancras. The 25 deaths from measles were less than a tenth of the average number in the corresponding period of the five preceding years, and included 5 in Battersea, 5 in Wandsworth, and 3 in Paddington. The 14 fatal cases of scarlet fever were 3 less than the average number; of these, 3 belonged to Hackney and 2 to Islington. The 58 deaths from diphtheria were 3 above the average; this disease was proportionally most prevalent in Hammersmith, Hampstead, Stoke Newington, Hackney, Holborn, Southwark, and Greenwich. The 15 fatal cases of whooping-cough were a tenth of the average number; of these, 4 belonged to Woolwich, 2 to Fulham, 2 to St. Pancras, and 2 to Lambeth. Six deaths from enteric fever were registered during the month, agreeing with the average in the corresponding period of the five preceding years. The 44 deaths from diarrhœa and enteritis among children under 2 years of age were 22 less than the average; the greatest proportional fatality from this disease occurred in Kensington, Hammersmith, Fulham, Shoreditch, and Stepney. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during March was 71 per cent. below the average.

# The War and After.

## THE CASUALTY LIST.

THE name of the following medical officer appears among the casualties announced since our last issue :—

*Died.*

Temp. Capt. J. C. M. Bailey, R.A.M.C., O.B.E., was a student at St. Bartholomew's Hospital, London, and qualified in 1901. He held appointments at the West London Hospital, and prior to taking up war work was senior medical officer of the Nigeria (Southern Provinces) West African Medical Staff. He died in German East Africa, where he was P.M.O.

## OBITUARY OF THE WAR.

### WILLIAM CHARLES DAVIDSON WILSON, M.B., CH.B. ABERD.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. C. D. Wilson, who was killed in action on the Salonika front on Sept. 18th last in his twenty-fifth year, was fourth son of Alex. S. Wilson, of Aberdeen, insurance manager. Educated at Robert Gordon's College, Aberdeen, he entered the University at an early age, and when the war broke out he was in his final year as a student. In October, 1914, he went with Colonel H. M. W. Gray and the late Dr. A. H. Lister, both of Aberdeen, his native city, to a Red Cross Hospital at Wimereux in France, and after serving there for some months returned to finish his medical course, taking the degrees of M.B., Ch.B. in July, 1915. Immediately thereafter he joined the R.A.M.C. attached to the 2/2nd Highland Field Ambulance. After being promoted captain he was for some time medical officer to the 321st Brigade, R.F.A., then stationed at Heydon. From there he was sent, in the summer of 1917, to Salonika, where he was attached to a field ambulance in connexion with No. 63 General Hospital, and saw a good deal of service at advanced dressing stations at various points of the Salonika front. Latterly he was with the 9th South Lancs. Regiment. He met his death while attending to the wounded on the first day of the final advance against the Bulgars. His superior officer writes of him: "Captain Wilson was a brave man, with a high sense of duty and popular with his fellow officers," and a colleague adds that his sense of loss is tempered by memories of happy association.

## CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported :—

Flight Sub-Lieut. E. C. Stocker, R.N., reported missing, now presumed killed, March, 1918, younger son and only surviving child of Major E. G. Stocker, R.A.M.C., of Carn Brea, Cornwall.

# THE SERVICES.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. H. L. W. Norrington retires on retired pay.

Temp. Capt. A. C. Parsons to be acting Major whilst specially employed.

Temp. Capt. (acting Major) G. Bouthellier, Canadian A.M.C., relinquishes the acting rank of Major on ceasing to be employed at Canadian Special Hospital, Witley.

Officers relinquishing their commissions:—Temporary Majors retaining the rank of Major: T. B. Heggs, W. Pemberthy, T. H. T. Frampton. Temp. Capt. L. D. Shaw (granted the rank of Lieut.-Col.). Temporary Captains granted the rank of Major: S. G. Luker, W. C. Douglass, G. V. Bakewell. Retaining the rank of Captain: L. F. Hemmins, F. H. Storey, V. M. Walsh, D. B. I. Hallett, B. H. Mellon, J. H. Tomlinson, W. C. Rainsbury, F. C. H. Bennett, J. H. Hood, A. Grant, A. G. Troup, H. Neame, W. Farquharson, K. H. Stokes, J. C. Clayton, A. Y. Hutchison, J. Rowat, R. H. C. Gompertz, J. H. Saunders, A. E. A. Burkhard, T. R. H. Blade, F. Paine, G. Price, N. Instone, A. E. Gravelle, J. D. Judson, J. Kean, D. Green, G. C. Anderson, A. Reeves, W. C. Fraser, R. H. Scovell, B. B. Ferrar, R. H. Robinson, E. M. B. Payne, A. B. Bateman, D. Jeaffreson, T. W. E. Ross, A. Baldie, P. J. Hay, R. L. Moorhead, C. S. L. Roberts, H. S. Banks, E. L. Taylor, M. B. Lindsay, A. Boyle, A. L. Anderson, A. M. Crawford, H. G. Smith, J. E. R. McDonagh, H. E. H. Mitchell, S. B. Turner, R. E. McLaren, W. St. J. Cogan, A. H. Donaldson, J. A. Noble, W. G. McAfee, G. A. Rorie, J. C. P. Bailey, J. D. Driberg, F. de R. Martyn, C. A. Holburn, J. S. Pearson, R. W. Dale, F. A. Morrison. Temp. Hon. Capt. J. Brereton-Barry, on ceasing to be employed with the Welsh Hospital, Netley. Temp. Lieuts. G. L. Lefevre and A. W. Eadie retain the rank of Lieutenant.

#### SPECIAL RESERVE OF OFFICERS.

Capt. (acting Major) T. Lindsay relinquishes the pay and allowances of his acting rank.

#### TERRITORIAL FORCE.

The undermentioned relinquish their acting rank on ceasing to be specially employed: Majors (acting Lieut.-Cols.) D. F. Todd, A. W. Moore; Capts. (acting Majors) J. A. Young, F. R. Eddison, W. J. Gray, A. M. Davie, H. E. S. Richards; Capt. (acting Lieut.-Col.) H. K. Dawson.

Major E. L. Anderson is seconded whilst employed with the West African Medical Staff.

Capt. H. A. T. Fairbank to be Major.

Capt. (acting Lieut.-Col.) J. G. Hill relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Field Ambulance, and reverts to the acting rank of Major whilst specially employed.

Capt. H. E. S. Richards to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Maj.) A. Oliver relinquishes his acting rank on vacating an appointment as Deputy Assistant Director of Medical Services.

Capt. R. P. Anderson to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

1st London General Hospital: Capt. (acting Major) H. D. Clementi-Smith relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

2nd London Sanitary Company: Lieut. G. T. P. Tatham to be Captain.

2nd Southern General Hospital: Capt. (acting Major) C. F. Coombs relinquishes his acting rank on ceasing to be specially employed.

### ROYAL AIR FORCE.

*Medical Branch.*—Lieut.-Col. E. C. Cridland relinquishes his commission on ceasing to be employed.

2nd Lieut. (acting Capt.) L. W. Jones is transferred to the unemployed list.

H. Gardiner-Hill (temporary Captain, R.A.M.C.) is granted a temporary commission as Captain.

The undermentioned are transferred to Unemployed List: Capt. B. Maclean, Lieut.-Col. G. N. Biggs.

*Dental Branch.*—The undermentioned are transferred to Unemployed List: Second Lieut. D. Campbell, Capt. C. J. Crocker.

THE BENN ULSTER EYE, EAR, AND THROAT HOSPITAL, BELFAST.—At the annual meeting of this institution, held on April 16th, the Lord Mayor of Belfast presiding, a committee was appointed to take into consideration the appeal that has been made for the enlarging and equipping of the hospital. Founded in 1871, and opened in 1874, it has during almost half a century been a place where over 100,000 persons from Belfast and the North of Ireland have received special advice and treatment, but the building demands enlargement and structural alterations, a laboratory is required, and a modern X ray installation is needed. It is hoped the public will subscribe the necessary funds. During the past year there were 1467 new patients, and, financially, there is a small sum of £37 6*s.* 7*d.* of an overdraft at the bank.

# Correspondence.

"Audi alteram partem."

## THE LOWER UTERINE SEGMENT AND UTERINE TENDONS.

*To the Editor of* THE LANCET.

SIR,—In THE LANCET for March 22nd (p. 481) Dr. R. H. Paramore takes me to task for the description I have given of the tendons of the uterus, and traverses some of the conclusions founded on that conception. As Dr. Paramore has made so close a study of the pelvic floor it is to me a matter of sincere regret that I cannot convince him as to the truth of my views.

There are several minor and three important particulars in which he appears to differ from me: 1. In respect to the existence during pregnancy of these uterine tendons (Makenrodt's ligaments). 2. Their paramount rôle (if present) in keeping the uterus in its elevated position. 3. Whether the elongated supra-vaginal portion of the cervix is caused as a result of hypertrophy rather than that of a mere stretching process. The truth or error of these differences of opinion can be brought within the range of actual observation, and I suggest the following procedure as a means of settling the question. When operating for prolapse, ring the base of the cervix by an incision as for circular amputation. Press the bladder off the uterus up to its peritoneal border. Wipe the skin flaps from either side of the cervix outward toward the lateral fornices. If these flaps are not easily wiped from the cervix deepen the incision. If traction is now applied to the cervix the tendons will be brought into distinct relief. They can be compared to stirrup-straps. They are sharply differentiated from surrounding structures and are capable of being palpated on their lower and upper surfaces. Their state of tautness produced by traction on the cervix demonstrates, beyond a doubt, the importance of their function.

Dr. Paramore is mistaken in thinking that this tissue must be removed when Wertheim's hysterectomy is performed. It is severed but a short distance from the cervix. The gap left in the vault of the vagina quickly closes by central cicatrisation and Makenrodt's ligaments are drawn tighter than ever.

In the further steps of the operation above described, the cervix will probably require a circular amputation, and will thus afford Dr. Paramore an opportunity of testing my third contention—viz., that the elongated cervix is the result of hypertrophy and not a mere stretching of tissue. Were it the latter it will appear as a structure not thicker than that of a pencil. Whereas, if my experience is correct, its diameter will remain undiminished.

Dr. Paramore states that what I call the tendons of the uterus "have not the same structure as tendons," and that "we are not going to believe that tissues of a different structure, and, indeed, of a different order, behave similarly." What he means exactly by this sentence is not quite clear. Anatomists describe a tendon as a fibrous cord by which a voluntary muscle gains attachment to bone. They have not, it is true, described tendons in connexion with involuntary muscle. The tissue, however, which forms the floor of the pelvis, consists of bundles of fibrous tissue and smooth muscle intimately mingled together. This tissue radiates from the uterus at the level of the os internum. At one extremity it is intimately blended with the muscle fibres of the uterus, at the other it is attached to the bony walls of the pelvis. It forms a fibro-muscular diaphragm or floor for the pelvis, stronger in some parts than in others, and either kept in tension or relaxed according as the os internum is contracted or open. It is thus a fibro-muscular attachment of the uterine muscle to the bony walls of the pelvis, just as a tendon is a fibrous insertion of a voluntary muscle into bone. I consider that this similarity of structure and of function justifies me in using the term "tendon of the uterus." If this contention is correct it is obvious that as long as the os internum remains closed the cervix uteri will be protected from direct pressure from above, while as the os internum dilates during pregnancy pressure will be exerted by the ovum of the cervix. This, I contend, leads to growth in the cervix, and the formation of the lower uterine segment.

There is much of Dr. Paramore's criticism which does not concern the matter under consideration. The fact that there is a rise of intravaginal pressure during coughing does not affect the question. That the condition of the bladder influences the position of the uterus is surely not disputed by anyone. Obstetricians differentiate between "procidentia uteri" and "prolapse of the uterus," and it did not seem necessary to define the meaning of terms in such common use. What exactly Dr. Paramore means by the last sentence in his letter I am at a loss to understand, nor does the statement there made appear to explain any obstetric or gynæcological difficulty.

I am, Sir, yours faithfully,

Dublin, April 15th, 1919. E. HASTINGS TWEEDY.

## THE NOTIFICATION OF DYSENTERY.

*To the Editor of* THE LANCET.

SIR,—In your issue of April 12th I find a long article on the disposal of dysentery cases. I find that dysentery is to be notified and that "thus ..... prompt and effective treatment will be secured for the individual." Now I have a case in point. A patient has come to me stating that he has had dysentery and has now a relapse. The relapse seems to be clinically diarrhœa. It is no doubt a case calling for investigation. If I send a specimen to the county laboratory, the result is a foregone conclusion. It will be negative because positive results vary in inverse ratio to the time before specimens arrive at the laboratory—in this case it is a long time. Again, am I to notify the case without more evidence than an attack of diarrhœa and even if I do will any treatment be provided? The patient will not enter an institution if asked to. Further, no one is likely to be at great pains to notify cases when there is no resulting benefit to the patient and 1*s.* reward to the doctor. Five shillings might begin to pay us for the particulars asked—I hear no suggestion of such payment. Nor can I prevent the patient from being a milkman or a pastrycook, or anything he likes. Will a notification have this effect? If it will I am certainly disinclined to notify without adequate bacteriological investigation, for I might thereby do the man considerable injury and general practitioners are least of all able to inflict damage of this sort.

I ask these questions because it seems to me that many regulations exist but their outcome is of dubious benefit to anyone. If we have a hot summer there is reason to expect such outbreaks of dysentery as have already occurred among the civilian population in Germany. It is not too soon to prepare really effectual schemes for meeting such emergencies. I am, Sir, yours faithfully,

Sevenoaks, April 17th, 1919. GORDON WARD, M.D. Lond.

## A FREAK OF NATURE?

*To the Editor of* THE LANCET.

SIR,—It may, I think, be questioned whether, as stated in your annotation with this title in THE LANCET of April 5th, prehistoric archæology "is especially productive of questionable conclusions." I do not consider that the annotation establishes the case. Has it yet been *proved* that the painted lines which Professor Sollas found in a Welsh cave are without any doubt "the daubs on the wall of a boat-builder's former paint store"? Again, I know of no reason why genuine neolithic "pot-boilers" should not be present "on the site of a Jubilee bonfire," or are we to suppose that bonfires are never lit where calcined flints of the Neolithic period are lying upon the ground? Then as regards the Stopes' shell, which is quoted as an example of one of the "prodigies" that have deceived the "very elect." Reference to the Proceedings of the Prehistoric Society of East Anglia, Vol. I., Part III. ("Report of Special Committee"), pp. 326–332, will show that this specimen did not "deceive" those of us who formed the special committee appointed to examine it. But perhaps we are not to be numbered amongst the "very elect." Finally, I cannot see why, if the piece of chalk I have described in *Man* for February last is proved to be humanly fashioned, "it will be of great importance for the solution of the problem of the antiquity

of man." Such a demonstration would merely show that probably in the late Palæolithic period people in England sometimes carved chalk into animal forms, as we know they did quite frequently in other materials, on the continent of Europe during the same epoch. But the antiquity of the human race is not really involved in the question of the natural or artificial nature of the Great Glemham "mammoth." I replied to Dr. Andrews in a letter to *Nature* of March 20th. It may be that my name is familiar to the general public by the advertisement for the Foxhall mandible, but THE LANCET must be careful, or its reputation may be said to rest upon a less enviable basis—viz., that of writing upon subjects with which it is not familiar.

I am, Sir, yours faithfully,

Ipswich, April 10th, 1919. J. REID MOIR.

*** We publish Mr. Reid Moir's letter with pleasure, but he does not quote us accurately. We said nothing about Dr. Stopes's discovery having "deceived the very elect," knowing that it had not done so. We hope that more may be heard of the "mammoth," because the problem of the antiquity of mankind is constantly being elucidated by accurate archæology—we repeat our words, knowing what we are writing about.—ED. L.

## UNREGISTERED DENTAL PRACTITIONERS.

*To the Editor of* THE LANCET.

SIR,—Having been a reader intermittently of your world-known paper at home and abroad for 25 years, might I take the liberty of thanking you for your remarks in your late insertion respecting the proposed future dental legislation. I am much afraid that, having done thousands of dental operations, both at home and abroad, for the past 30 years, I deem the qualified dentist not to have had (up to war-time, that being an exception, gunshot wounds, fractures, &c.) much more experience than myself, and I note, having carefully read the proposed Act for future legislation, there is neither provision nor encouragement given for any old practitioner desirous of obtaining the L.D.S. Might I appeal to the generosity and fairness of your worthy General Medical Council to allow me a six months' course and a modified examination to give me a social standing at my advanced age (60).

Hoping that your learned and worthy Council might give me some slight hope in the matter,

I am, Sir, yours faithfully,

JOHN C. CARR,

Old Rossall Boy; Son of the late Rev. Canon Carr, B.A., M.A., LL.D., Honorary Canon of Liverpool, and Great Grandson of Captain W. Locker, R.N., Admiral Lord Nelson's first Captain.

Liverpool, S., April 14th, 1919.

*** The position of the unqualified dental practitioners is discussed in the recent Report of the Departmental Committee, and in the formation of a new Register their inclusion is considered. The Committee sums up the principle upon which it wishes to see the admission of the unqualified take place by advising the precautions to be taken to ensure in each candidate suitability for the privilege.—ED. L.

## WIDOWS' PENSIONS IN THE NAVY.

*To the Editor of* THE LANCET.

SIR,—Throughout this war one department of Government has been conspicuously unkind to its retired officers who have volunteered to help, deducting pensions from their pay, though they probably had house-rent and other liabilities hanging over them, and I think young doctors should reflect that widows' pensions in the Navy are not to be held with other pensions for Naval or Military Service of their husbands, a rule that is not made by the Army. Thus, a fleet-surgeon volunteers for service in the war, but, not wanted by his own service, he joins the Army. If he is lost his widow, you might think, would get the pension appropriate to his long service in the Navy, but no. If he is killed on active service she gets a pension the same as any widow of a temporary officer of that rank in the Army, but she loses the Naval pension appropriate to her husband's long service at sea. Such a case has occurred. It is strictly according to the Navy Regulation, but is it fair?

I am, Sir, yours faithfully,

FLEET-SURGEON.

# Medical News.

UNIVERSITY OF CAMBRIDGE.—The following candidates have now passed in both parts of the April Examination in Sanitary Science:—

Kenneth Biggs, M.C. (Captain, R.A.F.), Winnifred Jane Crawford, Frank Philip Gilbert de Smidt, Norman Veitch Lothian, M.C. (Major, R.A.M.C.), John Joseph McConnell, Katherine McNeill, Frank Mahabir, William Aloysius Murphy (Captain, R.A.M.C.), Alwyn Tom Hays Nisbet (Captain, A.A.M.C.), Thomas Eric Parker, Winifred Hannah Sharrard, Harry Neville Stafford.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination held from April 1st to 15th the following candidates were approved in the undermentioned subjects, but are not eligible for diplomas:—

*Medicine.*—W. S. Adams and R. G. Addenbrooke, Birmingham; Hilda Crichton Bowser, Royal Free; G. A. A. Bradnack and J. V. C. Braithwaite, Guy's; P. J. Briggs, Cambridge and Guy's; Anna Bridget Broman, St. Mary's; E. F. Brown, Birmingham; B. Y. H. Christmas, Middlesex; H. Cohen, Westminster; H. S. Cohen, London; M. Cohen, Guy's; S. M. Cohen and P. C. Collyns, St. Bart.'s; E. A. L. Crichlow, King's Coll.; I. J. Cruchley, London; C. L. Curle, G. L. Cutts, and A. K. Day-Lewis, Guy's; J. J. P. de Chaumont, Charing Cross; K. M. K. Duff, Guy's; C. Dunscombe, Cambridge and St. Bart.'s; T. G. Evans, St. Bart.'s; Kathleen Field, St. Mary's; M. Girgis, Univ. Coll.; W. G. Hay, Guy's; R. B. P. Lansdown, Cambridge and Guy's; Teresa Jadwiga Lesser, Royal Free; H. J. Levy, Cardiff and St. Bart.'s; M. Marcus, London; C. Moffatt, Guy's; D. G. F. Moore, St. Bart.'s; C. F. Newman, Birmingham; W. G. Owen, London; G. S. B. Philip, Charing Cross; B. R. Reynolds, Bristol and St. Bart.'s; A. H. Richards, St. Mary's; S. Rose, Guy's; Doris Elsie Florence Stanton, Birmingham; Sonia Straschun, St. Mary's; A. W. Taylor, St. Bart.'s; W. G. Tilleke, Cambridge and Univ. Coll.; T. Verghese, St. Andrews; H. E. Williams, London; C. B. Wilson, Cambridge and Univ. Coll.; and Jane Edith Wood, Leeds.

*Midwifery.*—R. J. Allison, Manchester; W. F. Attwater, Cambridge and Guy's; Margarita Sargood Barfield, Royal Free; G. F. Baxter, Westminster; A. H. Bean, Univ. Coll.; Julia Bell, St. Mary's; C. M. Billington, St. Thomas's; M. R. Boe, Kingston, Ont.; W. Bowler and J. P. Brown, Liverpool; T. A. Brown, Oxford and St. Thomas's; W. M. Brown and H. G. Burford, Guy's; S. M. Cohen, St. Bart.'s; A. C. M. Coxon, Guy's; H. E. Cumming, McGill; D. D. R. Dale, St. Bart.'s; H. Donovan, Birmingham; H. Dryerre, Edinburgh; K. M. K. Duff, Guy's; W. Edge, Moscow and Manchester; M. A. K. El Hennawy, St. Mary's; H. M. Gerson, London; S. Grossman, Edinburgh; E. A. H. Grylls, Cambridge and London; R. R. Halsall, Manchester; E. P. Hicks, Cambridge and St. Bart.'s; C. A. Hutchinson, London; M. F. Ismail, Guy's; S. H. Kagan, Boston; G. W. Karunaratna, Cambridge and Middlesex; G. V. C. Last, Liverpool; H. J. Levy, Cardiff and St. Bart.'s; F. G. Lewtas, Cambridge and St. George's; G. P. Lindsay, Guy's; G. J. W. McMichael, Univ. Coll.; M. Marcus, London; O. G. Misquith, Cambridge and St. George's; F. Moor, Cambridge and St. Thomas's; J. E. B. Morton, Oxford and King's Coll.; Arulomani Pichaimuthu, Westminster; C. M. Probert, Guy's; M. S. Rageb, Cairo and Middlesex; G. K. Reeves, Guy's; Olive Ballance Sharp, St. Mary's; C. Shaw, St. Bart.'s; J. A. P. Shaw, Cambridge and St. Thomas's; E. A. Sparks, St. Thomas's; J. V. Sparks, A. W. Taylor, and B. M. G. Thomas, St. Bart.'s; W. S. R. Thomas, Cambridge and Guy's; N. G. Thomson, Cambridge and St. Bart.'s; G. C. Thornton, Birmingham; T. Verghese, St. Andrews; A. C. S. Whiteway-Wilkinson, Univ. Coll.; Gladys Mary Thurlow Williams, Birmingham; I. G. Williams, St. Bart.'s; T. Williams, Middlesex; D. W. Winicott, Cambridge and St. Bart.'s; M. L. Young, Cambridge and St. Thomas's; and T. F. Zerolo, Cambridge and St. Bart.'s.

*Surgery.*—F. T. Allen, St. Thomas's; M. Aronsohn, London; E. J. Bilcliffe, St. George's; O. T. J. C. de H. Clayre, Copenhagen and St. Bart.'s; H. N. W. Collins, King's College; J. P. de Silva, London; H. Dryerre, Edinburgh; W. Edge, Moscow and Manchester; H. M. Gerson and F. J. Good, London; H. H. Goodman, Leeds; Mary Isabel Alleyne Grimmer, Durham and Charing Cross; C. H. Gunasekara, Cambridge and Middlesex; O. S. Hillman, Middlesex; F. B. Hobbs, Cambridge and St. Thomas's; S. Kelly, Manchester; R. C. B. Ledlie, Guy's; D. Livingston, Durham; J. E. B. Morton, Oxford and King's College; J. G. Strachan, Toronto; B. M. G. Thomas, St. Bart.'s; and D. V. Townshend, Birmingham.

UNIVERSITY OF BRISTOL: POST-GRADUATE STUDY.—In connexion with the post-graduate studies of the University weekly clinical demonstrations will be given at the Royal Infirmary and General Hospital alternately, on Thursdays, 2.30–3.30 P.M., during May, June, July, October, November, and December. A course of clinical demonstrations has been arranged for medical practitioners by the University. Each demonstration will be given by a "team" composed of a physician, a surgeon, a pathologist, or a specialist, and any others who have coöperated in the diagnosis and treatment of the case concerned. It will be illustrated by apparatus, books, specimens, tests, and methods. The course will include subjects associated with recent researches, recent epidemic outbreaks, and general diseases on which new observations have been made. In order that the practitioner may also have opportunities for personal study and practice, attendants on the course will have the further advantage of admission for medical instruction for one month to any or all

the departments of the clinical institutions included in the University. The following are the fixtures for the month of May, and additional lists will be issued monthly:—Bristol Royal Infirmary: May 1st, Encephalitis Lethargica; 15th, Diagnosis and Treatment of Vague Abdominal Pain; 29th, Locomotor Ataxia. Bristol General Hospital: May 8th, Some Dermatoses of the Face; 22nd, Chronic Constipation. For those who are able to devote several hours each day to hospital practice, the University offers special facilities for post-graduate work. Qualified medical practitioners may be appointed as clinical assistants for a period of one or more months. They may act as assistants, if times permit, in more than one department and in any of the hospitals during their period of study. They will be entitled to the use of the clinical laboratories and medical library, and have the right to attend in all departments, including operations, post-graduate and ordinary clinical demonstrations, and post-mortem examinations. All inquiries and applications for admission should be addressed to the Director of Post-graduate Studies (Clinical Section), Pathological Department, University of Bristol.

UNIVERSITY OF GLASGOW.—On April 22nd the degree of Doctor of Medicine was conferred on William Ernest Boyd.

THE QUEEN'S UNIVERSITY OF BELFAST.—On the nomination of the Medical Faculty the Senate of Queen's University, at their meeting on April 17th, appointed Professor T. Sinclair, C.B., representative of the University on the General Medical Council for the next three years.

LONDON SCHOOL OF MEDICINE FOR WOMEN.—A special post-graduate course on Diseases of the Thyroid and Parathyroids, will begin on Monday, May 5th, at 10 A.M. The classes are arranged in conjunction with the Fellowship of Medicine and will be held at the Royal Free Hospital, Gray's Inn-road, and the Medical School, 8, Hunter-street, and post-graduate students wishing to attend the course should send in their names not later than April 30th, to Miss L. M. Brooks, Warden and Secretary of the School.

UNIVERSITY OF BIRMINGHAM: POST-GRADUATE STUDY.—In the Faculty of Medicine a post-graduate course of lectures (with clinical demonstrations) on Venereal Disease (illustrated with lantern slides) will be given by Dr. A. Douglas Heath, physician to the Skin Department, General Hospital, in the Anatomical Theatre of the Medical School Buildings, Edmund-street, on Mondays, May 5th and 12th, and on Thursdays, May 8th and 15th, at 4.30 P.M.—A course of ten lectures on "Psychotherapy in the Treatment of the Psychoneuroses" will be delivered by Dr. Bernard Hart, physician for Mental Diseases, University College Hospital, London, in the Large Theatre of the Medical School Buildings, weekly, on Tuesdays, at 4 P.M., commencing on April 29th. Both courses are free to members of the medical profession and students of medicine of the University, who are cordially invited to attend.

LACK OF MEDICAL FACILITIES IN BRITISH EAST AFRICA.—Our own correspondent writes: For the first time since June, 1914, the Convention of Associations of British East Africa, familiarly known locally as "the Settlers' Parliament," met at Nairobi on Jan. 21st. The Convention lasted several days, several subjects being considered. Major Grogan presided, and among the colonists present were Lord Delamere and Sir Northrup McMillan. On Jan. 23rd the Subcommittee on European Medical Services issued a report in which the deplorable lack of medical facilities was recorded and certain recommendations were made to the Government. It was urged (1) that a medical officer be appointed to every district; (2) that the services of medical officers in these districts be equally available to the public and officials; (3) that the personnel be sufficiently increased to meet the demand of the growing European population, especially in outlying districts, and that adequate funds be made available for increased remuneration of all medical officers; (4) that every facility be afforded at the centres for medical treatment, that medicine be given to the native population in outlying districts, and that quarantine and other necessary accommodation be provided; (5) that a medical officer be appointed for the Plateau, and that a dispensary for Trans Nzoia and a hospital at Eldoret be immediately established; (6) that district hospitals, properly equipped and endowed, are urgently needed, and that where such hospitals are established not less than two nurses be appointed and proper accommodation be provided. Funds for these purposes should be available from (*a*) private subscriptions, (*b*) donations, (*c*) war memorial funds, (*d*) fees, and (*e*) Government grants. The Government is asked to collaborate with district organisations in giving effect to these recommendations.

# Parliamentary Intelligence.

## HOUSE OF LORDS.

TUESDAY, APRIL 15TH.

*Shell-Shock Patients.*

Earl STANHOPE asked the Under Secretary for War whether he would explain the object of moving patients in military hospitals so constantly that the stay of the average patient in one hospital was seldom more than a few weeks; whether patients on removal from one hospital to another were accompanied by medical history sheets; why educational training sheets should not similarly follow patients from one hospital to another, thereby ensuring continuity of training. He expressed the view that it must be a disadvantage to patients to have a constant change of doctors. Of course, this disadvantage would be mitigated to some extent if the patient were accompanied by a medical history sheet on going to a fresh hospital.

Viscount PEEL, in reply on behalf of the Government, stated to the House numerous reasons why it was necessary to remove patients from one hospital to another. It was often necessary, he said, to afford particular forms of treatment to a patient, facilities for which were not provided in the hospital he was in. Another reason for removal was to enable the patient to be as near his home as possible. A medical history sheet accompanied the patients to a new hospital, and there had been an Army Order in existence for some time the object of which was to ensure continuity in training.

*Neurasthenia and Shell Shock.*

Earl STANHOPE asked the Under Secretary for War whether idleness or occupational work was considered to have the better curative effect on patients in hospital suffering from neurasthenia and shell shock; how many officers and other ranks had been discharged from the Army owing to neurasthenia; and how many officers and other ranks were at present in military hospitals suffering from neurasthenia and shell shock, and how many of them were receiving vocational training?

Viscount KNUTSFORD said that the treatment of these cases depended on the intensity of each individual patient's complaint. The term neurasthenia covered a very large number of diseases. He could not understand why so many people thought they could cure neurasthenia. He had received a number of letters from all sorts of people pretending that they could offer marvellous cures. Experience had shown that neurasthenia was best dealt with by a treatment which included absolute quiet and rest, followed by a sort of modified activity based on a carefully thought-out plan which was adapted to each patient's idiosyncrasies. The patient ought to be encouraged to associate with other people. One point was to try and stimulate what was in the mind before the disease developed. In the way he had described nearly all the cures had been effected. He had seen a man hardly human from the effects of the disease who had been cured. It was with pride and satisfaction that he acknowledged that the best of this country had given up their time and attention to assist in fighting this difficult and complex disease.

Viscount PEEL, replying, took some exception to the opening words of the noble earl's question "whether idleness" and so on. He thought it was rather a severe term to use. As to his first question, he could only give a general answer to the effect that it must be left entirely to the judgment of the doctor what, if any, form of occupation was good for the patient in the particular stage in which he was. Each case had to be carefully considered. Generally speaking, when any kind of occupation was taken up the chances of a quick recovery were increased. With regard to the second question, the number of officers discharged owing to shell shock was 295, neurasthenia 2112, and miscellaneous nervous diseases 441. The figures for the men were not quite comparable, because no analysis had been made in the same way. The number discharged for nervous diseases was 34,592. As regards the last question about the number of patients in hospital, he had tried to get the figures but he had not been able to obtain them.

## HOUSE OF COMMONS.

WEDNESDAY, APRIL 16TH.

*Tetanus among British Troops.*

Mr. FREDERICK GREEN asked the Secretary for War to give the number of cases of tetanus among British troops in this country and abroad during the war.—Mr. CHURCHILL replied: The numbers of cases and deaths from tetanus

amongst the wounded arriving in this country are as follows:—

| | 1914. | 1915. | 1916. | 1917. | 1918. |
|---|---|---|---|---|---|
| No. of cases ... | 192 | 134 | 501 | 353 | 266 |
| No. of deaths ... | 104 | 75 | 182 | 68 | 68 |

Complete information is not available at present regarding the number of cases and deaths from tetanus which occurred among the troops with the various forces and were not sent to England.

*International Opium Convention.*

Major JAMESON asked the Under Secretary for Foreign Affairs what action had been taken with a view to secure the ratification and enforcement of the International Opium Convention, 1912, by those Powers which, prior to the war, had not deposited their ratification.—Mr. HARMSWORTH answered: The British Peace Delegation have submitted a proposal that all the powers represented at the Conference should bind themselves to take such steps as may be required on their part to bring the Opium Convention of 1912 into force and that a clause should be inserted in the peace terms imposing on enemy States the obligation of ratifying the Convention at an early date and enacting the legislation necessary to carry out its provisions. The British Delegation had further suggested that the League of Nations should be entrusted with the duty of supervising the execution of the terms of the Convention and generally of exercising control over the international traffic in opium and other deleterious drugs.

# Appointments.

BEAVER, R. ATWOOD, M.D., Ch.B. Vict., M.B. Lond., has been appointed Resident Medical Officer in the Royal Mineral Water Hospital, Bath.

BRODETSKY, J., M.R.C.S., L.R.C.P., Senior Resident Surgeon to the Rochdale Infirmary.

BRUCE, O., M.R.C.S., L.R.C.P. Lond., Tuberculosis Officer, County of Middlesex.

COLLINS, M. A., M.D., B.S. Lond., temporary Lieutenant-Colonel, R.A.M.C., Medical Superintendent at the Kent County Asylum, Chartham, near Canterbury.

LEITH, M. H., M.D., Ch.B., Honorary Surgeon to the Hospital for Women, Liverpool.

PIGOTT, F. S. L., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Teignmouth district of the county of Devon.

STIRLING, W., jun., M.D. Vict. Manch., Honorary Assistant Surgeon to the Manchester Royal Eye Hospital.

WHITE, H. V., M.D. Vict. Manch., Honorary Surgeon to the Manchester Royal Eye Hospital.

# Vacancies.

*For further information refer to the advertisement columns.*

*Barnstaple, North Devon Infirmary.*—H.S. £150.
*Bedford County Hospital.*—H.P. £150.
*Bombay, Baroda, and Central India Railway.*—M.O. Rs.800.
*Bombay, Municipal Corporation of the City of.*—Exec. Health Officer. Rs. 1500 to Rs. 2000 monthly.
*Bradford City.*—Bacteriologist. £600.
*Brentwood, Essex County Mental Hospital.*—Fourth Asst. Female M.O. £250.
*Burton-on-Trent Infirmary.*—H.S. £200.
*Cambridge, Addenbrooke's Hospital.*—H.P. and H.S. £150. Also Second H.S. £100.
*Cambridgeshire County Council.*—Asst. Tuberc. Officer. £550.
*Carlisle, Cumberland Infirmary.*—H.P. £250.
*Carmarthen Mental Hospital.*—Second Asst. M.O. £200.
*Central London Ophthalmic Hospital, Judd-street, St. Pancras.*—H.S. £50.
*Cheshire County Council.*—District Tuberc. O. £400.
*Chesterfield and North Derbyshire Royal Hospital.*—Three Hon. Surg., Hon. Pathologist and Bacteriologist, and one Hon. Dental S.
*Colchester, Severall's Mental Hospital.*—Temp. Asst. M.O. 7 gs. a wk.
*Colonsay and Oransay Parish.*—M.O. and Public Vacc. £220.
*Derby County Asylum.*—Jun. Asst. M.O. £250.
*Ealing, W., King Edward Memorial Hospital.*—Consulting S.
*East Riding Lunatic Asylum, Beverley.*—Med. Supt. £900.
*Edinburgh, Royal Asylum, Morningside.*—Temp. Asst. P. £365.
*Exeter City.*—Asst. M.O.H. and Asst. School M.O. £400.
*Hampstead General and North-West London Hospital.*—Clin. Asst. in Ear, Nose, and Throat Department.
*Hospital for Diseases of the Throat, Golden-square, London, W.*—Res. H.S. £100.
*Jarrow Borough.*—M.O.H. £750.
*Lancaster County Asylum.*—Asst. M.O. 7 gs. per week.
*Leeds City.*—Female Med. Asst. £400.
*Leeds City Hospitals for Infectious Diseases and Tuberculosis, Seacroft.*—Jun. Asst. M.O. £300.
*London Fever Hospital, Islington, N.*—Res. M.O. £300.
*Manchester Education Committee.*—Asst. Sch. M.O.'s (Male and Female). £450.
*Manchester Royal Infirmary.*—Res. S.O. £400. Also Asst. Res. S.O. £350.
*Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.*—Res. Surg. £200.
*Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.*—Clinical Assistants.
*Middlesbrough, North Ormesby Hospital.*—Asst. H.S. £150.
*Middlesex County Council.*—School Dentist. £350.
*Middlesex Hospital, W.*—Res. M.O. £250.
*Middleton-in-Wharfedale Sanatorium, near Ilkley.*—Res. Med. Supt. £450.
*National Dental Hospital, Great Portland-street, W.*—Hon. Anæsthetist.
*Newcastle-on-Tyne, Hospital for Sick Children.*—Res. M.O. £250.
*Nottingham and Midland Eye Infirmary.*—Female Res. H.S. £200–£250.
*Oldham Royal Infirmary.*—Third H.S. £200.
*Portsmouth County Borough.*—Asst. Tuberc. O. £400.
*Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.*—Asst. Res. M.O. £60.
*Queen's Hospital for Children, Hackney-road, Bethnal Green, E.*—Hon. Surg. to Ear, Nose, and Throat Dept. Also Asst. P.
*Rotherham Hospital.*—Jun. H.S. £150.
*Royal Dental Hospital of London, Leicester-square, W.C.*—Clin. Assts. One guinea per session. Also Two Demonstrators of Operative Dent. Surg. £150 and £125.
*Royal Free Hospital, Gray's Inn-road, W.C.*—Senior Res. M.O. £200. Also Two H.S. £50.
*St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, W.*—Hon. Anæsthetist. Also Clinical Asst.
*Salford Royal Hospital*—Two Hon. Asst. P.'s, Hon. Asst. S., Hon. Oph. S., and Hon. S. for Diseases of Ear, Nose, and Throat. Also Pathologist. £300.
*Sheffield, East End Branch of the Children's Hospital.*—H.S. £150.
*Sheffield Royal Infirmary.*—Cas. Officer. Also Ophthal. H.S. £150.
*Sheffield University.*—Two Demonstrators in Pathology and Bacteriology £400 and £300.
*Southampton, Free Eye Hospital.*—H.S. £150.
*Sunderland, Durham County and Sunderland Eye Infirmary.*—Surgical Officer-in-Charge. £500.
*Swindon, G.W.R. Medical Fund Society.*—Asst. M.O.'s. £500.
*University College Hospital.*—Clinical Pathologist. £500.
*University of London.*—University Chair of Anatomy (Royal Free Hospital) School of Medicine for Women. £600. Also University Chair of Anatomy at Guy's Hospital Medical School. £600.
*Warford, Alderley Edge, Cheshire, David Lewis Epileptic Colony.*—Asst. Director. £400.
*Wells Asylum, Somerset.*—Asst. M.O. £300.
*West Riding County Council.*—Sch. Med. Inspectors. £400. Also Sch. Oculist. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Mold, Barrowden, Dursley, and Longton.

# Births, Marriages, and Deaths.

## BIRTHS.

CAREY.—On April 13th, at Chevington House, Bungay, the wife of Temporary Surgeon Lieutenant R. S. Carey, R.N., of a son.

HUNTER.—On April 12th, at Chelsea-gardens, S.W., the wife of Captain Ronald N. Hunter, R.A.M.C., of a daughter.

LYLE.—On April 16th, at West Dene, Netley, Hants, the wife of Captain J. Duncan Lyle, R.A.M.C., of a daughter (Sonia).

## DEATHS.

HOLLAND.—On April 8th, 1919, at 32, Charterhouse-road, Godalming, Frederick William Peachey (Derick), the dearly loved son of Dr. and Mrs. Holland, aged 11 years.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

## Communications, Letters, &c., to the Editor have been received from—

A.—American Public Health Association, Boston.
B.—Dr. R. M. Buchanan, Glasgow; Major F. B. Bowman, C.A.M.C.; Mr. F. E. Beddard, Lond.; Dr. C. W. Budden, Hoylake; Messrs. P. Blakiston's Son and Co.; Surg.-Capt. P. W. Bassett-Smith, R.N.; Dr. W. Brown, Lond.; Board of Education, Lond.; Dr. H. W. Barber, Lond.; Mr. G. Bethell, Lond.; Miss L. M. Brooks, Lond.; Major W. Broughton-Alcock, R.A.M.C.(S.R.); Prof. W. M. Bayliss, Lynmouth.
C.—Chicago School of Sanitary Instruction; Dr. F. G. Crookshank, Lond.; Dr. B. G. R. Crawford, M.B.E., Mancot; Capt. A. E. Carver, R.A.M.C.; Children's Country Holidays Fund, Lond.
D.—Mr. F. Davidson, Lond.; Mr. H. Drinkwater, Wrexham; Lieut. E. W. Dewey, R.A.M.C.; Dr. R. Donald, Lond.; Mr. H. Dickinson, Lond.
E.—Dr. C. Engelbreth, Copenhagen; Enquirer.
F.—Faraday Society, Lond.; Dr. J. G. Forbes, Redhill; Faculty of Insurance, Lond, Sec. of; Dr. A. Francis, Lond.
G.—Mr. H. T. Gray, Lond.; General Medical Council, Lond., Registrar of; Mrs. E. S. Gaskell, Lond.
H.—Lieut.-Col. A. P. Hurst, R.A.M.C.; Dr. C. A. Hodgetts, Ottawa; Prof. W. Hall, Bristol.
K.—Dr. R. Knox, Lond.; Mr. W. P. Kelly, Arklow.
L.—Mr. B. M. Little, Lond.; Sir W. A. Lane, Bt., C.B., Lond.; Local Government Board, Lond., Sec. of.
M.—Mr. J. S. Milne, Swalwell-on-Tyne; Dr. I. Moore, Lond.; Dr. D. C. Martin, New York; Dr A. Macdonald, Lond.; Capt. J. Miller, R.A.M.C.
N.—Mr. C. A. R. Nitch, Lond.; Nestlé and Anglo-Swiss Condensed Milk Co., Lond.
P.—Mr. J. E. Purvis, Cambridge.
R.—Röntgen Society, Lond.; Mr. P. B. Roth, Lond.; Miss Rayson, Westcliff; Railway Executive Committee, Lond., Sec. of; Royal College of Surgeons of England, Lond., Sec. of; Registrar-General, Lond.
S.—Dr. A. G. Shera, Netley; Sunderland Press Agency; South-Eastern Union of Scientific Societies, Lond., Hon. Sec. of.
T.—Dr. J. Tatham, Oxted; Dr. J. Taylor, Aldershot; Mr. F. H. Taylor, Lond.
U.—University of Birmingham, Faculty of Medicine, Dean of.
W.—Dr. J. Watson, Jersey; Dr. C. Watson, Edinburgh; Lieut.-Col. J. H. T. Walsh, I.M.S.; Wigan, Tuberculosis Officer of.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

# Medical Diary for the ensuing Week.

## SOCIETIES.

**ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.**

**Monday, April 28th.**

SPECIAL GENERAL MEETING OF FELLOWS, at 5.30 P.M.
To consider and, if approved, to confirm, the following resolution:—
That the Royal Society of Medicine, representing as it does every branch of the Medical Profession throughout the Empire, and with full knowledge of the grave issues involved, feels bound to place on record its earnest hope that the Dog Protection Bill will not pass into law—as if enacted it will place this country at a great disadvantage as compared with all other civilised countries, and will practically compel our ablest workers to seek opportunities for preventive and curative research abroad.

**Wednesday, April 30th.**

SOCIAL EVENING: at 8.30 P.M.
Dr. Moreland McCrea: Pitfalls of General Practice.

*MEETINGS OF SECTIONS.*

**Monday, April 28th.**

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 7.30 P.M.
*Casual Communication* by Mr. J. H. Badcock.
*Paper:* Captain C. Ernest West, R.A.M.C.: Experiences with Transplant Grafts in Ununited Fracture of the Mandible.

**Tuesday, April 29th.**

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.
*Paper:* Dr. Julius Burnford: Further Notes on the Epidemic with Special Reference to Pneumonia in Macedonia.

**Thursday, May 1st.**

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Comyns Berkeley, J. S. Fairbairn): at 8 P.M.
Annual Meeting.—Election of Officers and Council for 1919-1920 (names already circulated).
*Short Communication:* Dr. Lapthorne Smith: An Obstetric Helper.
*Paper:* Mr. Victor Bonney: The Continued High Maternal Mortality of Childbearing: the Reason and the Remedy.

**Friday, May 2nd.**

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore) Summer Congress.
10 A.M.–1 P.M., *Papers* by Dr. James Donelan, Dr. P. Watson-Williams, Mr. C. H. Hayton and Dr. Benians, Dr. Dan McKenzie, Dr. D. R. Paterson, Mr. J. F. O'Malley, Dr. Irwin Moore, Dr. W. H. Kelson, Dr. W. S. Syme, Dr. E. A. Peters, and Mr. W. G. Howarth.—2.30–4 P.M., *Demonstrations* by Dr. William Hill, Major H. D. Gillies and Major Seccombe Hett, and Dr. Dan McKenzie.—4 P.M. Patients.—4.45 P.M., Annual Meeting:—Election of Officers and Council for 1919–1920 (names already circulated). (Detailed programme will be issued.)

**The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine" is also open to all medical officers. Particulars of this will be supplied by the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W.1.**

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, WEDNESDAY AND FRIDAY, April 28th, 30th and May 2nd.—9 P.M., Lettsomian Lectures:—Dr. W. H. Willcox: Jaundice, with Special Reference to Types occurring during the War.

TUBERCULOSIS SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.
MONDAY, April 28th.—8.30 P.M., Address:—Dr. H. Sutherland: Tuberculosis Officers and Panel Practitioners.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
TUESDAY, April 29th.—8.30 P.M., Paper:—Dr. *N.* Raw: The Position of Medicine in the State.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, April 30th.—4.30 P.M., "Trueman Wood" Lecture:—Sir Herbert Jackson, K.B.E.: Glass and Some of its Problems.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY AND THURSDAY, April 29th and May 1st.—5 P.M., Oliver Sharpey Lectures:—Dr. E. H. Starling.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, in the Theatre of the College, Lincoln's Inn Fields, W.C.
FRIDAY, May 2nd.—5 P.M., Museum Demonstration:—Prof. A. Keith: Gunshot Injuries of the Bones and Joints of the Lower Extremity.

LONDON HOSPITAL MEDICAL COLLEGE.
A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—
MONDAY, April 28th.—1 P.M., Lecture XIV.:—Symptoms and Treatment of Carcinoma and Sarcoma of the Stomach.
FRIDAY.—10 A.M., Lecture XV.:—Foreign Bodies, Rupture of the Stomach, Gastric Adhesions, Acute Dilatation of the Stomach.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
WEDNESDAY, April 30th.—4.30 P.M., Lecture:—Dr. B. Shaw: On Hospitals for Treatment of Pulmonary and Other Forms of Tuberculosis. A National Need.

# Notes, Short Comments, and Answers to Correspondents.

## THE COMPOSITION OF POTATOES.

IT was realised during the war what an important part potatoes occupied in the national dietary, especially when the extension of their use occurred as a substitute for other foodstuffs, particularly bread stuffs. It then was decided to appoint a subcommittee acting under the Food (War) Committee, Royal Society, to obtain adequate and reliable information as to the composition and nutritive characteristics of the nation's potato supplies. The report of this subcommittee was issued last week and is signed by Sir Thomas Middleton, K.B.E., C.B. (chairman), Department of Food Production, Board of Agriculture and Fisheries; Charles Crowther, M.A., Ph.D., Professor of Agricultural Chemistry in the University of Leeds; F. Gowland Hopkins, Professor of Bio-chemistry in the University of Cambridge; D. Noel Paton, M.D. Edin., F.R.C.P. Edin., F.R.S., Professor of Physiology in the University of Glasgow; and E. J. Russell, O.B.E., D.Sc., F.R.S., Director of the Experimental Station, Rothamsted. The report adds very little to what was already known as to the chemical composition of the potato, but contributes some interesting information on questions of the best strains, of fertilisers, and of environment as it affects production. Attention from a chemical point of view was directed mainly to the content of total dry matter and total nitrogen in the representative samples chosen, and a very exhaustive series of analyses on these heads is presented in the report. It is pointed out that the fact that certain varieties are shown to possess a higher dry-matter content than others is of considerable economic importance, especially in view of the consideration that these varieties are also of good quality. It was considered desirable to ascertain whether the order of richness indicated by the 1917 crop (an unusually good season and the best for many years) is definitely characteristic or largely seasonal, since if this season's experience turned out to be the general rule, a factor hitherto ignored would clearly need to be taken into account in the selection of varieties. One characteristic variation which emerges fairly clearly from the results of this investigation is a regional variation as between the eastern and western half of the country, representing presumably in the main the effects of difference of rainfall. The average dry matter is distinctly higher and the nitrogen content lower for the east than for the west. On the whole, the trend of these regional variations may have been anticipated, since the outstanding difference in general conditions of growth as between east and west is one of rainfall, whilst between north and south it is more one of temperature. As far as dry matter is concerned, however, the difference between north and south is far less pronounced than that between east and west. Low rainfall and high average temperature tend to produce potatoes relatively rich in dry matter and poor in nitrogen, whilst high rainfall and low average temperature are apt to give a more watery potato less fully matured and consequently relatively rich in nitrogen. As to variations due to soil, manuring, size of tubers, and so forth, the data are too heterogeneous, the Committee add, to permit of any clear correlation between soil characteristics and composition of the tuber. There are indications of a tendency towards increased dry matter and nitrogen content in the potatoes grown on the heavy soils as compared with light soils, but the variations within each group are too great to warrant any definite conclusion as to the existence of a specific correlation. There is more distinct evidence of correlation between the size and composition of the tuber, the percentage of dry matter and nitrogen rising roughly in the same proportion with increasing size of tuber, and the percentage of nitrogen in the dry matter being correspondingly approximately constant. It is to be regretted that in only a few instances were data available as to the weight of crop obtained on the farms from which samples were received. Without this information the Committee point out that it is impossible to assess the real effect upon food supplies of the differences in composition shown by the different varieties. In the varieties examined the dry matter ranged from 19 to 26 per cent., and the nitrogen from 0·24 to 0·40 per cent. No reference is made to the existence of food accessory factors in the potato or to any dietetic advantages popularly believed to reside in the "jacket."

## NERVE STRAIN IN LONDON CHILDREN.

THE resolution of the Labour Party in the London County Council proposing to secure for London elementary school-children a month's holiday in the country or by the sea without charge to the parents (THE LANCET, March 29th, p. 540) has been pronounced impracticable by the Elementary Education Subcommittee of the Council. Lack of suitable

lodging accommodation and of travelling facilities, the risk of epidemics, and the difficulty of supervision were among the difficulties stated to stand in the way. Mr. L. Haden Guest, agreeing that it was not possible to take out a large number of children, urged the organisation of school camps for the purpose.

The acting secretary of the Children's Country Holidays Fund writes to urge the claims of the Fund during the coming summer. The Fund has of late been much hampered in its scope by war conditions, and the children are hailing the advent of peace as a remover of special restrictions. Workers are badly needed in every district. Personal service and donations are required to carry on the pre-war tradition, which resulted in enhanced health and vigour for thousands of needy children. Cheques may be sent to the secretary at 18, Buckingham-street, London, W.C. 2.

## ELECTRICAL TRAINING FOR DISABLED MEN.

A PAPER dealing with the training of disabled men in electrical engineering was read by Mr. Frederic H. Taylor, Associate of the M.Inst. of Electrical Engineers, at the Junior Institution of Engineers on April 11th. The paper was based on his experience of the work carried on at the training centre at Croydon, which specialises in the teaching of electrical installation, maintenance, and repair work, although many men have been prepared for and have taken up central station duty, substation duty, electrical instrument making, testing work, private plant attendant's duty, &c. At present 62 men are undergoing training at the centre; the number for the whole country trained for electrical engineering or in training is approximately 882. Mr. Taylor advises that in spite of manifest objections the man should enter for his course within a few days of leaving hospital; although treatment during training entails loss of teaching, yet in very many cases the lost lesson is recovered from the man's class associates. He finds that men with an artificial leg or foot lose very little time in climbing ladders or walking the distances required. Standing presents no difficulty if combined with an intermittent amount of walking. One-armed men are capable of performing many ordinary duties quite efficiently; at the centre are several one-armed men who can bend, cut, and screw pipes quite as well as any other man. A man with an amputation of two fingers and thumb of the left hand and of the thumb on the right hand can hold tools quite comfortably, and can make ordinary spliced joints in small cables in a reasonable time.

## NATIONAL LEAGUE FOR HEALTH, MATERNITY, AND CHILD WELFARE.

A GENERAL meeting of the above League was held on April 14th, at the Guildhall, London, the representatives of the League being welcomed by the Lord Mayor. After the Lord Mayor's address, in which he paid fitting tributes to the work of Bishop Boyd Carpenter and Lord Rhondda, and referred to the increased opportunities of welfare work now opening up under the Ministry of Health, Lady Rhondda took the chair and introduced what proved to be a valuable discussion of some of the fundamental laws governing the present rapid decrease of child life.

### *Women and the Question of Health.*

The CHAIRMAN said that those present might congratulate themselves on having done their share to bring into being through the establishment of a Ministry of Health, the means of securing health and happiness, as Sir Bertrand Dawson had put it, "to every citizen by right, and not by favour." Every section of the community had some special contribution to make to the general good, and that State was most successful which made it possible for each section to bring its gift in the best way, and thus used every ounce of national power. They were therefore very anxious that women should be well represented at the Ministry of Health, because they felt the question of health to be largely a woman's question; they believed that here was a special service which women might bring to the community as a whole. They therefore greatly welcomed the promise of Major Waldorf Astor, that the people's council should consist half of women. The people's council was a very useful piece of machinery; it would regard the Bill from the point of view of the consumer to see what he was getting.

### *The Ministry of Health and Child Welfare.*

Dr. C. W. SALEEBY, who took the place of Major Waldorf Astor, absent owing to illness, said that the idea of a Ministry of Health was old history. He reminded the audience that it had been calculated, from statistics supplied by Sir Arthur Newsholme, that if a Ministry of Health could be set up, which would put an end to our maladministration, the lives of 1000 babies a week could be saved. That was four years ago, he said, and we had not yet got the measure actually on the Statute Book; it could be seen what an appalling waste of infant life had since taken place. But unless babies were born they obviously could not be saved. The birth-rate had fallen so badly that our latest vital statistics showed that we had now reached a point which was really critical. Even admitting special factors, such as influenza, we were making a somewhat hastened approach to a condition of national stasis. Through the recent agitation and the measures that have been taken the infant mortality had been reduced by about one-third. This reduction had not come about by natural causes, but by the strenuous work of a number of people who cared about it. If without a Ministry of Health and with the muddle of a whole host of departments we could reduce the infant mortality by one-third in 15 years, might we not hope that the Ministry of Health, with its special department for mothers and babies, with a woman at its head, would mean that the rate of progress would be not only maintained but accelerated? But even devoted methods were not going to maintain the fight against the infant mortality of the present century unless radical changes were made. The infant who died from dirty milk and the long-tube feeding bottle and from flies in summer had been saved, but as far as the very young infant was concerned our success was still to seek.

### *The Problem of Maternity.*

We had to choose between replacing the mother and reinforcing her. In Bradford the mother went out to work and did not nurse her baby; there was the long procession of women rushing from factories to the hovels where their babies had been left all day, and in spite of the £40,000 a year which Bradford spent on infant welfare work the mortality was still 130 per 1000. It was not by replacing the mother that we were going to reduce our infant mortality. Professor Pinard, one of the founders of puericulture, had lately published many articles, notably in *Le Matin*, in which he showed that the factory was threatening the death of the French people. The problem in its present state was primarily a problem of maternity. Sir George Newman, when he wrote the first book on infant mortality written in English, spoke of "our social problem of motherhood." Most people thought of it as a medical problem. Certainly it became a medical problem: the baby died of something, and that something was a medical problem, but these medical problems scarcely arose in the West of Ireland. He believed it was a fact that where the social problem had been solved, amongst the Quakers in England, there was an infant mortality which approached vanishing point. Nature invented the principle of saving the baby through the mother; a woman had, we must admit, all the powers of a man, but she had also powers which no man could emulate. We wanted the happy infant in its happy, healthy mother's arms, and then all else will be added unto us. If we were going to expend ourselves for any other production than this we should assuredly go into the abyss into which every empire of the past had gone.

### *Work for the V.A.D.*

Lady OLIVER said they were going to call upon V.A.D.'s to prove that voluntary work should continue. The Red Cross at present existed only for service with armies, and its rules applied only to service for the sick and wounded in war; but it was proposed to widen its charter so that it would be possible to use Red Cross funds in peace time for civil work. A central council of all national societies for infant and child welfare had already been established at 83, Pall Mall, London. Sir Arthur Stanley was the chairman, six members of the Red Cross being members of the council. A scheme for V.A.D.'s had been worked out in Norfolk on a county basis, under a president, vice-president, and a council. 21,000 V.A.D.'s had worked in hospitals during the war and 10,000 in other work, and it was hoped that many would be able to serve the work of child welfare and to keep the organisation together. They were to work at infant welfare centres, under medical officers of health, medical men, and district nurses, and their work would be in connexion with the weighing of babies, dressing and undressing, and keeping of records. In connexion with day nurseries, it was proposed that they should act as voluntary visitors, reporting to the day nursery, that they should work in connexion with lectures on baby management and with travelling exhibitions. They might also do dispensing at different centres. The Norfolk detachment had asked headquarters to add baby study to their course for examination. The Chislehurst division was starting a hostel for 16 unmarried mothers, to be staffed by the local detachment. A number of scholarships were being offered to V.A.D.'s who had given distinguished service, to help them in their training as doctors, dentists, midwives, district nurses, welfare supervisors, almoners, or infant welfare workers.

At the conclusion of the meeting votes of thanks were proposed by Dr. G. F. STILL, and seconded by Dr. ERIC FRITCHARD.

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*Enquirer.*—If the second doctor who was called in knew the exact position he would have been following the usual course in suggesting a consultation, but there is no evidence that he was aware of the circumstances.